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COMMERCIAL FISHERIES REVIEW

A review of developments and news of the fishery industries
prepared in the BUREAU OF COMMERCIAL FISHERIES.

Joseph Pileggi, Editor*
G. A. Albano,** H. M. Bearse, and H. Beasley, Assistant Editors

(*On special assignment for 7 months. **Acting Editor)

Address correspondence and requests to the: Chief, Fishery Market News Service, U. S. Bureau of Commercial Fisheries, Wyatt Bldg., Suite 611, 777 14th Street, NW., Washington 5, D.C.

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OYSTER FAMILY TREE

Oysters in Louisiana can be found breeding from April until October and in isolated cases even during the winter months. This is why the breeding oysters are called "milky" because of the milky looking fluid they exude at that time.

The milk of the female is composed of millions of minute eggs; that of the male of an incalculable number of extremely minute spermatozoa. A large female has been estimated to contain 60 million eggs. This milk is cast out into the water where the sperm of the male drifts or swims to the egg and penetrates it. This act of fertilization begins the cycle of oyster life. After fertilization takes place the egg divides again and again forming a ball of many tiny cells. In the course of a few hours, small vibrating hairs called "cilia" appear on the developing young oyster. With these cilia it keeps itself suspended while being drifted about by the winds and currents. Presently this embryo develops a pair of tiny shells. These shells grow larger and heavier and finally the young oyster in this stage drops to the bottom and attaches itself to some hard object and gives up forever its own power of moving from place to place.

The young oyster can only attach itself to a clean surface, and after attachment while very small it is easily smothered by sediment and dies. This is why oystermen first lay beds of oyster shells as a foundation before planting the seed oysters. (Louisiana Conservationist, September-October 1962, Louisiana Wild Life and Fisheries Commission.)

Editorial Assistants: Ruth V. Keefe and Jean Zalevsky

Sr. Compositor: Alma Greene
Jr. Compositors: Donna K. Wallace and Marjorie McGlone

* * * * *

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STORAGE LIFE OF INDIVIDUALLY FROZEN PACIFIC OYSTER MEATS GLAZED WITH PLAIN WATER OR WITH SOLUTIONS OF ASCORBIC ACID OR CORN SYRUP SOLIDS[1/]

By Richard W. Nelson*

ABSTRACT

Pacific oyster meats frozen by conventional methods adhere together as a block. If the oysters could be separated individually without prior thawing, the convenience of the product would be greatly improved. Experiments were conducted to determine if freezing oysters individually, glazing them, bulk packaging them in bags, and storing the bags in cartons at 0° F. would produce individually separable oysters with a satisfactory storage life. As part of the experiment, three groups of individually frozen oysters were glazed respectively with (1) plain water, (2) a solution of corn syrup solids, and (3) a solution of ascorbic acid in water in order to test whether such glazes would increase the resistance of the individually frozen oysters to rancidity.

INTRODUCTION

Often, for both the retail and the institutional trades, Pacific oysters (Crassostrea gigas) are frozen in hermetically sealed cans. The results is a frozen block of oyster meats in each can. Thus, before the oysters can be used, the entire contents of the can must be thawed so that the oysters can be separated. Thawing the oysters takes time. Furthermore, the thawed product must be used immediately.

If frozen oysters were processed in such a manner that they could be removed singly from the package while still frozen, the convenience of the product would be greatly improved.

Attempting to produce such a product raised a number of questions: How should the oysters be frozen? Should they be glazed? If so, what kind of a glaze should be used? How should the product be packaged?

Several investigators have studied methods of freezing oysters individually. Schwartz and Watts 1959, found that individually frozen oysters (Crassostrea virginica) from the Gulf of Mexico glazed with a 0.5-percent or a 1.0-percent solution of ascorbic acid had unsatisfactory storage life due to the development of rancidity. Fieger, Novak, and Bailey

Fig. 1 - Packaging individually frozen ice-glazed Pacific oysters.

*Chemical Engineer, Technological Laboratory, U. S. Bureau of Commercial Fisheries, Seattle, Wash.

1/This research was financed in part by funds from The Refrigeration Research Foundation.

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1959, and Schwartz and Watts[2/] again using oysters from the Gulf of Mexico found the immersion freezing did not improve the quality of the frozen oysters. Studies at the Seattle Technological Laboratory, Dassow and Nelson 1959, in which Pacific oysters (Crassostrea gigas) were frozen by immersion in sodium chloride brine and in sodium chloride brine with corn syrup solids added showed that Pacific oysters could not be frozen satisfactorily in that manner.

Blast freezing at the commonly used temperature of -20° F. appeared to be the simplest method of freezing. From experience with such other products as salmon and halibut, it also appeared that glazing would probably add significantly to storage life by reducing rancidity. Experience further indicated that adding ascorbic acid (Tarr 1946 and 1947) or corn syrup solids (Dassow and Nelson 1959) to the glaze might provide added protection against rancidity.

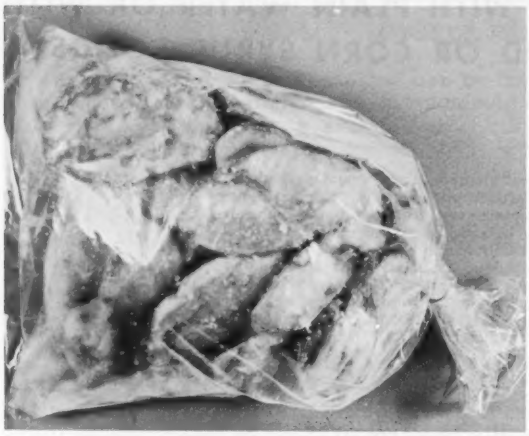

Fig. 2 - Individually frozen ice-glazed Pacific oysters packed in a polyethylene bag.

Fig. 3 - Package of individually frozen ice-glazed Pacific oysters opened for examination.

Packaging the oysters in bags made of a plastic, such as polythylene, and holding the bags of oysters in fiberboard cartons in storage at 0° F. appealed to the investigators as a convenient way of packing and storing. That method would simplify processing and reduce production costs if plain water could be used in the glaze or if the glaze could be omitted altogether.

The objectives of the experiments described in this report therefore were to determine:

1. If freezing oysters individually in a blast freezer at -20° F., ice-glazing them, bulk-packaging them in polyethylene bags, and then storing the bags in fiberboard cartons at 0° F. would result in individually separable oysters with a satisfactory storage life.
2. If glazing is necessary.
3. If so, whether a glaze made from a solution of ascorbic acid or of corn syrup solids would add significantly to the storage life as compared with a glaze made from plain ice.

EXPERIMENTAL

Fresh shucked Pacific oysters (Crassostrea gigas) were placed on metal trays individually and frozen at -20° F. in a blast freezer for 15 minutes. After the oysters were frozen, they were divided into four groups: (1) control (packaged without further treatment), (2) glazed with water, (3) glazed with a solution containing 2-percent corn syrup solids, and (4) glazed with a solution containing 1-percent ascorbic acid. Glazing was accomplished by dipping the frozen oysters twice, for 10 seconds each time, in the glazing solution, which previously had been cooled to about 33° F The controls and the glazed oysters were bulk-

2/Schwartz, Mark G., and Watts, Betty M. "Freezing Preservation of Raw Oysters and Oyster Stews." Unpublished report in Bureau of Commercial Fisheries files.

packaged in polyethylene bags (figs. 1 and 2), and then packed into fiberboard cartons and stored at 0° F.

The samples were examined at intervals of 2 months. Criteria used for judging the quality of the oysters were color, odor, general appearance, and flavor.

RESULTS

After 2 months at 0° F., the oysters that were not protected with a glaze began to show deterioration (see table). After 4 months, they exhibited definite effects of oxidative change in that they had a very slight rancid odor and were slightly dark on the surfaces. They now were considered to be on the borderline of acceptability. After 6 months, they showed yellow discoloration, had a rancid odor, and were unacceptable.

All of the glazed oysters retained their original quality up to 4 months of storage. After 6 months, a minor loss of ice glaze was apparent on the edges of the oysters, especially a-

Results of Examinations of Individually Blast-Frozen, Glazed Pacific Oysters Stored at 0° F.

Storage Period	Type of Glaze											
	None (Control)			Ice			1-Percent Ascorbic Acid			2-Percent Corn Syrup Solids		
	Color	Odor	Remarks	Color	Odor	Remarks	Color	Odor	Remarks	Color	Odor	Remarks
Months 2	Normal	Normal	Fair appearance; slight dehydration	Normal	Normal	Very good appearance	Normal	Normal	Very good appearance	Normal	Normal	Very good appearance
4	Slight darkening of oyster surfaces	Very slightly rancid	Poor to fair appearance; borderline acceptability	Normal	Normal	Good appearance	Normal	Normal	Good appearance	Normal	Normal	Very good appearance
6	Moderate yellow discoloration and darkening	Slightly rancid	Poor appearance; unacceptable	A few areas slightly discolored	Normal	Slight loss of glaze in a few areas; good appearance otherwise	A few areas slightly discolored	Normal	Slight loss of glaze in a few areas; good appearance otherwise	A few areas slightly discolored	Normal	Slight loss of glaze in a few areas; good appearance otherwise
8	Entire surface dark yellow discoloration	Rancid	Inedible	A few areas slightly discolored	Normal	Slight loss of glaze; good appearance otherwise	A few areas slightly discolored	Normal	Slight loss of glaze; good appearance otherwise	A few areas slightly discolored	Normal	Slight loss of glaze; good appearance otherwise
10	Entire surface dark yellow discoloration	Extremely rancid	Inedible	A few areas of yellow discoloration	Normal	Slight loss of glaze; fair to good appearance; borderline acceptability	A few areas of yellow discoloration	Normal	Slight loss of glaze; fair to good appearance; borderline acceptability	A few areas of yellow discoloration	Normal	Slight loss of glaze; fair to good appearance; borderline acceptability

long the mantle. Very slight discoloration was noted in those areas. The odor of the oysters was normal. No differences in the condition of any of the glazed oysters were apparent except that, in general, the oysters glazed with the solution containing 2-percent corn syrup solids had a slightly lighter color. After 8 months, the glazed oysters still were normal in odor and of good appearance. The slight discoloration and loss of ice glaze, however, was more apparent than at the 6-months examination. After 10 months, the sublimination of ice glaze and the development of discoloration were more noticeable and caused the samples to be rated at the limit of acceptability. Cooked oyster samples had very good flavor except in the discolored areas, which tasted slightly rancid.

DISCUSSION

In previous work, we found that frozen Pacific oysters packaged in hermetically sealed cans had a storage life of approximately 8 months at 0° F. (Osterhaug and Nelson 1957). The

oysters in the present test compared favorably in storage life to those frozen in the cans.

The major advantages of freezing the oysters individually are that (1) they can be removed singly from the container (fig. 3), (2) they thaw rapidly, and (3) they retain their natural shape and, when packed in transparent containers, look attractive (figs. 2 and 3).

The major disadvantages of freezing oysters individually are: (1) they must be held at freezing temperatures at all times, for if they are allowed to warm above freezing, they thaw around the edges and, if the temperature again falls sufficiently, refreeze in a mass; (2) considerable weight (about 10 percent) is added in glazing; and (3) they require more freezer space because the individual oysters do not pack tightly together. The author believes, however, that for many purposes, the advantages outweigh the disadvantages.

Adaptation of commercial methods to the production of individually frozen oysters would be fairly simple. A blast freezer, plate freezer, or tunnel freezer could be used for freezing. A metal mold such as a tray with oblong depressions stamped in it could best be used for freezing. Use of this tray would permit two rounded sides in the frozen product.

CONCLUSIONS

1. Freezing oysters individually in a blast freezer at -20° F., ice-glazing them, bulk-packaging them in polyethylene bags, and storing the bags in fiberboard cartons at 0° F. produced individually separable oysters having a frozen storage life of about 8 months.

2. Glazing was necessary to protect the product, as unglazed controls had a storage life of not longer than 4 months.

3. There was no marked difference in storage life whether the glaze was made from water only, from a solution of 1-percent ascorbic acid, or from a solution of 2-percent corn syrup solids.

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Created in 1849, the Department of the Interior--America's Department of Natural Resources--is concerned with the management, conservation, and development of the Nation's water, fish, wildlife, mineral, forest, and park and recreational resources. It also has major responsibilities for Indian and Territorial affairs.

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FLUCTUATIONS IN MAINE SHRIMP LANDINGS

By Robert L. Dow*

Off the New England coast, catches of the northern shrimp (Pandulus borealis) are made during the winter on spawning areas within a 50-mile radius of Boothbay Harbor, Maine, by small draggers operating from nearby ports. Landings have fluctuated widely from year to year and appear to be related to abundance. No shrimp were caught from 1954 through 1957. During the peak season of 1944/1945 more than one-half million pounds were landed.

Fig. 1 - Sorting out northern shrimp caught off the Maine coast.

Abundance, in turn, appears to be related to seawater temperature, especially during the peak of spawning when shrimp are sufficiently concentrated to be of commercial interest. Analyses of temperature and catch data support this assumption.

March is the principal fishing month and accounts for nearly 65 percent of the landings during the 23 seasons of record.

*Research Director, Maine Department of Sea and Shore Fisheries, Augusta, Maine.

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Rasmussen (1953) found that mature females of this species from the Oslo Fjord ranged from 24 to 28 months of age when they were about 4 inches in length. Maine fishermen generally keep only mature females averaging 4 inches or more in length.

Since both Maine and southern Norway are near the southern limit of the range, it is assumed that the shrimp taken in the Maine fishery are approximately two years of age.

The table shows the relation between March seawater temperature as measured at Boothbay Harbor and Maine shrimp landings two years later. These data suggest a favorable temperature range of 34° F. to 36° F. with declines in landings when temperatures are above or below that range.

Relation Between March Seawater Temperature at Boothbay Harbor and Maine Shrimp Landings Two Years Later

Mean March Seawater Temperature at Boothbay Harbor	Average Shrimp Landings Two Years Later	Number of Years
°F.	1,000 Lbs.	
32	45	3
34.5	235	5
36	275	3
37	50	3
38	45	3
39.5	10	4
41	0	2

Fig. 2 - A basketful of northern shrimp. This is a winter fishery.

If the assumption that a causal relationship exists between seawater temperature and shrimp abundance is valid, Maine landings should continue at a relatively high level through the 1964 fishing season. In March 1961 the seawater temperature was 36.5° F. In March 1962 the seawater temperature was 35.2° F.

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REVIEW OF THE 1962 SEASONAL MOVEMENT OF ALBACORE TUNA OFF THE PACIFIC COAST OF THE UNITED STATES

By Glenn A. Flittner*

ABSTRACT

Review of the 1962 seasonal movement of albacore tuna (Thunnus germo) off the Pacific Coast of the United States as revealed by U. S. Navy picket vessels monitoring fixed, continuously manned stations. Onshore and northward migration of albacore is related to rapid changes in corresponding 15-day sea surface temperature charts. Onset, termination of fishing at each station is reported, and relation to "optimum" sea temperatures is discussed. A schematic model of seasonal albacore movement of the Pacific Coast as suggested by 1960-62 catch data is presented.

BACKGROUND

As in the years since 1956, the U. S. Navy has continued its operation of the radar early warning surveillance network off the west coast of the United States. Coverage in 1962 extended from latitudes 31° N. to 50° N. at a distance from 200-500 miles from shore. A fleet of several vessels participated in the continuous-rotation schedule which required most ships to visit each station during the year for 20-30 day intervals.

In 1962 the joint U. S. Navy-U. S. Bureau of Commercial Fisheries cooperative picket vessel trolling program completed its third and most successful year. A total of 724 albacore was landed by the picket fleet. A large measure of the success can be attributed to the high degree of participation by picket vessel crew members. Recreational opportunities at sea are limited, and the fishing program has filled a vital need. The Bureau supplies each vessel with a kit of fishing gear and measuring board. Each kit contains several sets of trolling rigs made up of a 30-fathom line, shock-cord assembly, and standard commercial feather jig. All vessels troll with lines lashed to the stern rail, maintaining about 3-4 knots of steerage-way while steaming on station. A few catches were made by ships making speeds up to 8 knots.

As in previous years, the picket vessels commenced fishing on May 1 and terminated on November 1, the close of an average season. Late-season catches were made by the vessel Locator on November 1 and 7-10 inclusive.

RESULTS

The first catch of the 1962 season was reported by the U. S. S. Koiner at station 5 on June 11 (table 1). Fishing subsequently continued at this station well into July with few interruptions. Water temperatures ranged from 59°-60° F. at the beginning of fishing activity and rose to 64°-66° F. at the end. Albacore appeared at station 4 one week later (June 17), and at station 3 twenty-five days later (July 6). Station 2 reported the first albacore on August 7, whereas station 1 logged the first catch of the year on August 6. Fishing at station 6 was conducted on an intermittent basis; consequently, the date of earliest albacore catch does not necessarily represent the date of arrival of the first migrants.

Table 1 - Date of First Albacore Catch and Water Temperature at U. S. Navy Radar Picket Stations, 1962

Station Number	Approximate Position		Date of First Catch	Water Temp. (°F.)
	Latitude	Longitude		
1	50° N.	134° W.	August 6	62
2	45° N.	135° W.	August 7	63
3	42° N.	129° W.	July 6	59
4	40° N.	133° W.	June 17	59
5	35° N.	132° W.	June 11	59
6 1/	30° N.	128° W.	July 19	64

1/ Fishing on intermittent basis - not continuous in early season.

*Fishery Biologist (Research), Biological Laboratory, U. S. Bureau of Commercial Fisheries, San Diego, Calif.

U. S. DEPARTMENT OF THE INTERIOR
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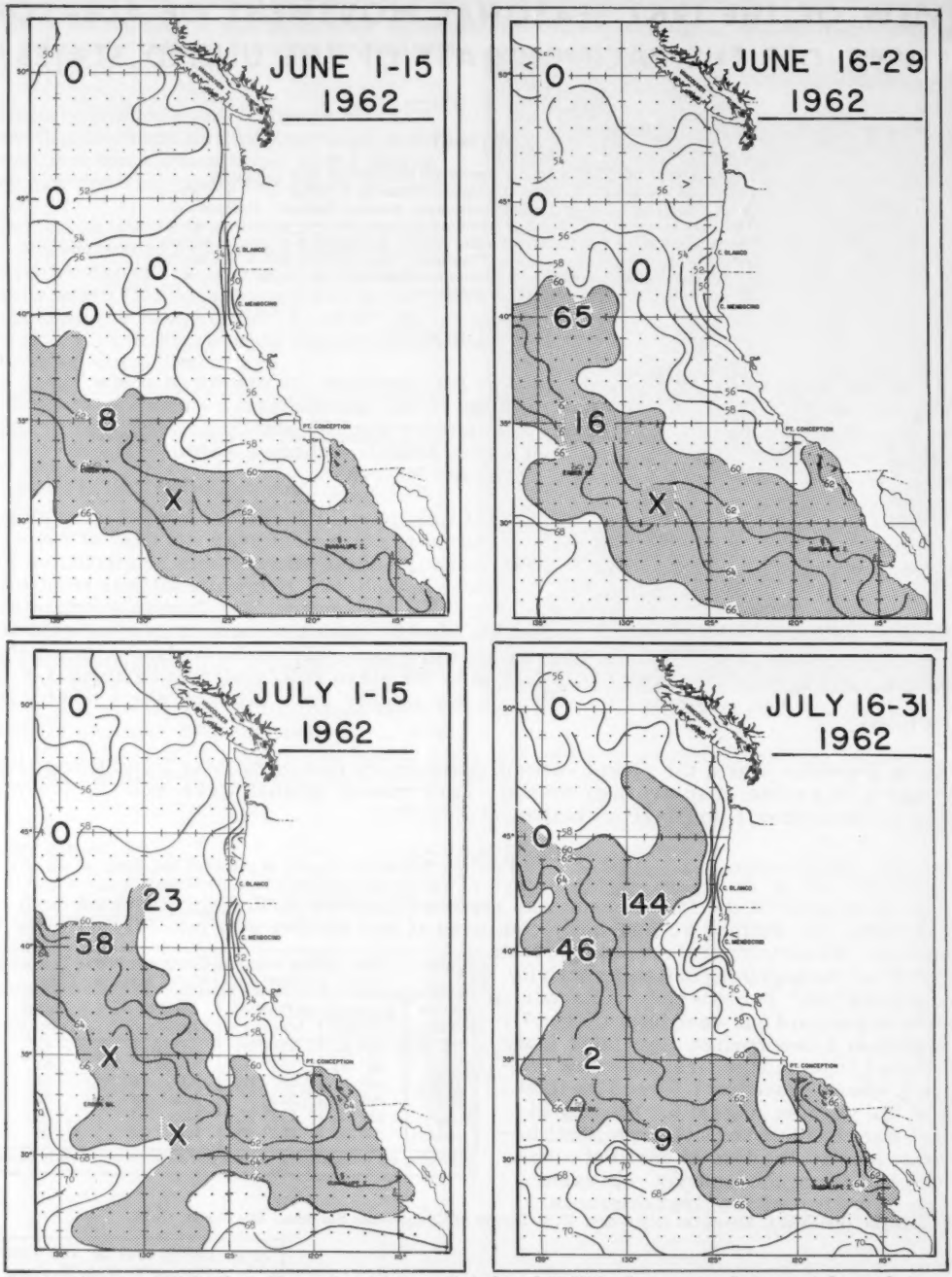

Fig. 1 - Albacore catch by U. S. Navy radar picket vessels in June-July 1962. Large numerals represent the catch at each station; small numerals indicate water temperature; and "X" indicates no fishing during the period. Shaded area delimits the 60°-66° F. temperature zone. More than two-thirds of the 1954-1958 California commercial albacore landings for June-September were taken from waters within these temperature limits.

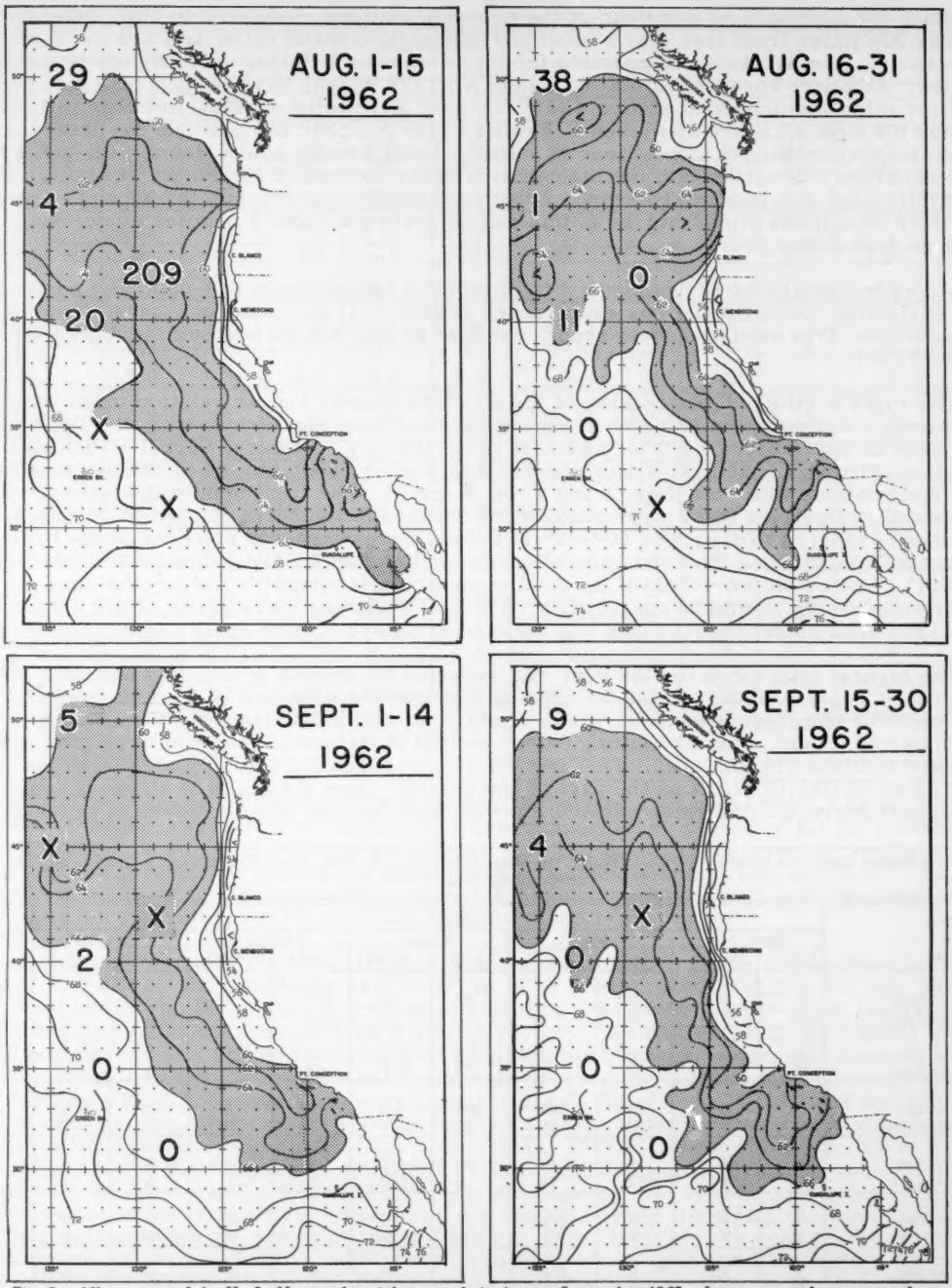

Fig. 2 - Albacore catch by U. S. Navy radar picket vessels in August-September 1962. Large numerals represent the catch at each station; small numerals indicate water temperature; and "X" indicates no fishing during the period. Shaded area delimits the 60°-66° F. temperature zone. More than two-thirds of the 1954-1958 California commercial albacore landings for June-September were taken from waters within these temperature limits.

Since the approximate positions of the northern stations monitored in 1962 differ by as much as 300 miles from last year's locations, the early-season catch data are not directly comparable. Comparisons are possible for those stations differing only slightly in location, however. Albacore appeared at station 5 (35° N., 132° W.) six days earlier than last year. The first catch was logged at station 4 (40° N., 133° W.) twelve days earlier than in 1961, whereas the first albacore was taken at station 3 (42° N., 129° W.) just one day later than last year. Major changes in positions of stations 1 and 2 make comparisons with earlier years hazardous; nevertheless, the indication of early northward movement was verified by the development of a good early-season fishery off the Oregon coast in the second week of July, even though sea temperatures in this region averaged about 2 degrees colder than in the same period last year.

Water temperatures at the northernmost stations ranged from 62°-63° F. at commencement of fishing. Good fishing was experienced at station 1, beginning on August 6, and ending on August 31. This station made a record catch of 82 fish for the season, far higher than in 1960 and 1961.

The rapid northward progression of the albacore fishery and its relation to the annual northward extension of the 60°-66° F. sea temperature zone was discussed in the December 1961 issue of the California Fishery Market News Monthly Summary, Part II - Fishing Information (Flittner, 1961). This relationship was further substantiated by the catch-temperature distributions this year (figs. 1 and 2, pp. 8 and 9). The "optimum temperature" zone was shaded in figures 1 and 2 to emphasize the changes in isotherm configuration which occur in periods as short as 15 days. The 60°-66° F. temperature range was selected on the basis of California Department of Fish and Game albacore landing data for the years 1954-1958 (Clemens 1961). More than two-thirds of the total commercial landings for the months June-September were caught in waters ranging from 60°-66° F. during these years. Only 14 percent of the 1962 total picket vessel catch was taken from waters outside these temperature limits.

The highest total catch for the year was reported by vessels monitoring station 3 off the California-Oregon boundary (table 2). During July and the first half of August, catches were made on 35 of 46 consecutive days. Unfortunately, fishing activities were terminated in the second half of August, thus preventing determination of the actual length of time good fishing may have continued in this area. That this station produced good fishing which was not the result of extra fishing effort on the part of enthusiastic crew members is shown in table 3. The highest average catch rates per 100 line-hours of trolling were achieved at this station.

Table 2 - Albacore Catch and Number of Days on Which Fish Were Taken by U. S. Navy Radar Picket Vessels Trolling on Station, June-October, 1962

Station and Item	Period										Totals
	June		July		August		September		October		
	1-15	16-30	1-15	16-31	1-15	16-31	1-14	15-30	1-15	16-31	
1/											
Number of fish	0	0	0	0	29	38	1/5	9	1/0	1	82
Number of days	0	0	0	0	6	10	1/4	2	1/0	1	23
2/											
Number of fish	0	0	0	0	1/4	1/1	X	1/4	1	0	10
Number of days	0	0	0	0	1/2	1/1	X	1/4	1	0	8
3/											
Number of fish	0	0	23	144	209	1/0	X	X	X	X	376
Number of days	0	0	7	13	15	1/0	X	X	X	X	35
4/											
Number of fish	0	65	58	46	20	1/11	2	1	0	2	205
Number of days	0	11	12	11	6	1/ 6	2	1	0	1	50
5/											
Number of fish	8	16	X	1/2	X	0	0	0	0	0	26
Number of days	3	6	X	1/2	X	0	0	0	0	0	11
6/											
Number of fish	X	X	X	1/9	X	X	0	0	0	0	9
Number of days	X	X	X	1/2	X	X	0	0	0	0	2
Total number of fish	8	81	81	201	262	50	7	14	1	3	708
Total number of days	3	17	19	28	29	17	6	7	1	2	129

1/Station not fished entire period.

Table 3 - Albacore Catch, Catch Rates and Distribution of Fishing Effort by U. S. Navy Radar Picket Vessels Trolling on Station, June-October, 1962

Station and Item	Period										Totals
	June		July		August		September		October		
	1-15	16-30	1-15	16-31	1-15	16-31	1-14	15-30	1-15	16-31	
1											
Number of fish	0	0	0	0	29	38	1/5	9	1/0	1	82
Line-hours fished	420	420	480	184	456	1526	504	198	840	1920	6948
Catch per 100 line-hours	0.0	0.0	0.0	0.0	6.4	2.5	1.0	4.6	0.0	0.1	1.2
2											
Number of fish	0	0	0	0	1/4	1/1	X	1/4	1	0	10
Line-hours fished	356	488	328	448	528	336	X	432	675	176	3767
Catch per 100 line-hours	0.0	0.0	0.0	0.0	0.8	0.3	X	0.9	0.1	0.0	0.3
3											
Number of fish	0	0	23	144	209	1/0	X	X	X	X	376
Line-hours fished	420	448	1520	1776	1340	224	X	X	X	X	5728
Catch per 100 line-hours	0.0	0.0	1.5	8.1	15.6	0.0	X	X	X	X	6.6
4											
Number of fish	0	65	58	46	20	1/11	2	1	0	2	205
Line-hours fished	468	1602	1032	720	726	364	1728	1632	420	416	9108
Catch per 100 line-hours	0.0	4.1	5.6	6.4	2.8	3.0	0.1	0.1	0.0	0.5	2.2
5											
Number of fish	8	16	X	1/2	X	0	0	0	0	0	26
Line-hours fished	307	758	X	216	X	500	637	156	420	448	3442
Catch per 100 line-hours	2.6	2.1	X	0.9	X	0.0	0.0	0.0	0.0	0.0	0.8
6											
Number of fish	X	X	X	1/9	X	X	0	0	0	0	9
Line-hours fished	X	X	X	138	X	X	630	576	420	448	2212
Catch per 100 line-hours	X	X	X	6.5	X	X	0.0	0.0	0.0	0.0	0.4
Totals:											
Number of fish	8	81	81	201	262	50	7	14	1	3	708
Line-hours fished	1971	3716	3360	3482	3050	2950	3499	2994	2775	3408	31205
Catch per 100 line-hours	0.4	2.2	2.4	5.8	8.6	1.7	0.2	0.5	0.0	0.1	2.3

1/Station not fished entire period.

During the July 1-August 15 interval mentioned earlier, catch rates rose from 1.5 to 15.6 fish per 100 line-hours, respectively. Optimum water temperatures prevailed for an extended period beginning on July 1 and ending on October 15. The gradual improvement in average fishing success through the season for all stations combined is shown also in table 3. Catch per 100 line-hours of fishing rose to a peak of 8.6 fish during the August 1-15 interval, dropped sharply during August 16-31, and then declined steadily thereafter.

For the third consecutive year, trolling was most successful in the region lying between latitudes 40°-42° N. and longitudes 128°-134° W. The accumulated evidence for this area strongly suggests that the annual migration of albacore toward the Pacific coast feeding areas centers in this region and extends over a 60-day period. The fish entering the coastal waters appear to congregate in this area within the "optimum temperature" zone, and seem to split into two migratory components: the early arrivals proceed to southern feeding areas within the prevailing NW.-SE. oriented isothermal pattern (fig. 1, June 1-15, 16-29), and the late arrivals turn to the northward as soon as the tongue of warm water proceeds northeastward to the coast off Oregon and Washington (fig. 1, July 1-15, 16-31). These two segments of the albacore population then appear to merge off central California-southern Oregon in the month of August as the isotherm field consolidates (fig. 2, August 1-15, 16-31), and apparently move offshore as the temperature field commences its annual cooling trend (fig. 2, September 15-30). These movements are schematized in figure 3. It is likely that in cold years, when the northeastward extension of warm water fails to develop off Oregon and Washington, the entire population moves southward toward the coast in a thermal zone similar to the June pattern.

That fishing may continue into late fall within these thermal limits is further evidenced by the November catch of 16 albacore (ranging from 7-11 lbs.) by the U. S. S. Locator at sta-

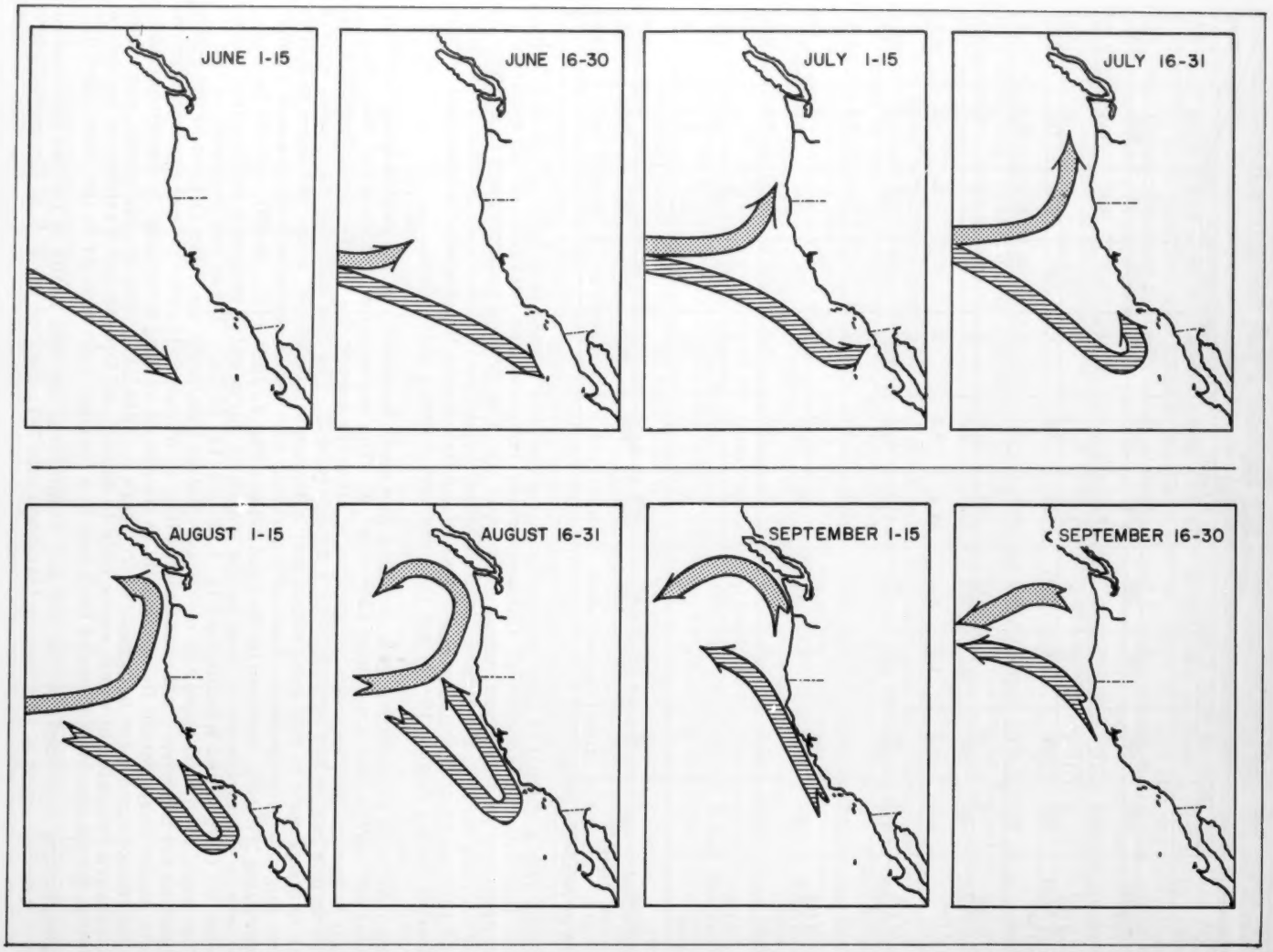

Fig. 3 - Schematic model of albacore movement off the Pacific coast as suggested by U. S. Navy picket vessel catch data, 1960-1962. Hatched arrow represents the southern (early) migratory component; stippled arrow represents the northern (late) migratory component.

tion 4. This catch of small fish was coincident with persistent late-season fishing into October and early November off southern California, when small fish were reported to be very abundant.

The U. S. S. Picket carried off the honors in total catch this year: 309 albacore were landed of a grand total of 724 fish for all vessels combined. This vessel also held top position in daily catch: 37 albacore were taken at station 3 on both July 29 and August 8.

Age-group representation in the 1962 picket vessel catch varied considerably from 1961. Whereas in 1961 the 31-inch group (78-80 cm.) comprised about 24 percent of the total catch, this year it made up less than 3 percent of the catch (fig. 4). The 25-inch (62-64 cm.) group dominated the 1962 catch, making up approximately 58 percent of the total; last year it contributed about 40 percent of the catch. The 21-inch (52-53 cm.) group contributed 38 percent of the total catch, about the same percentage as last year. The remaining 1 percent of the 1962 catch consisted of both very small and large albacore. A 15-inch albacore (38 cm.) was taken at station 3 on July 21, and a 38-inch fish (97 cm.) weighing 42 pounds was caught at station 6 on July 18.

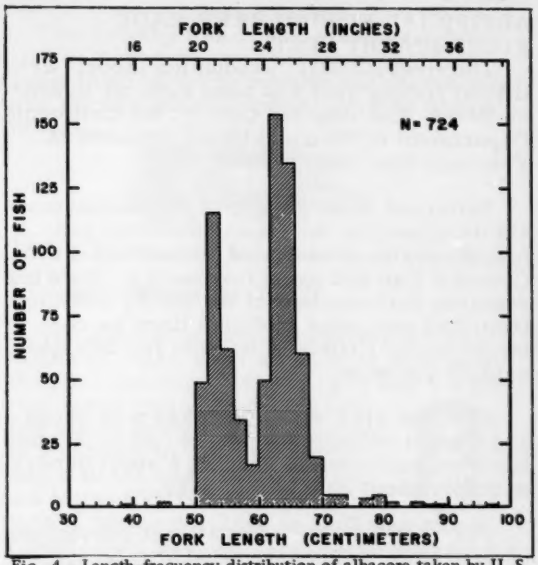

Fig. 4 - Length-frequency distribution of albacore taken by U. S. Navy radar picket vessels trolling on station, June-November 1962. All stations combined.

The high degree of correlation between sea temperatures and albacore distribution and availability can be seen readily from the preceding figures. The rapid shift in geographic distribution of sea temperature and catch in periods as short as 15 days should be of particular interest to all fishermen. A method of predicting sea temperature distributions is being sought.

The continuing enthusiasm on the part of Radar Picket Squadron One personnel made the 1962 season most successful. Although two vessels (Picket, 309 fish; Watchman, 160 fish) took the major portion of the catch, the smaller catches and negative reports from other participating vessels were of equal value in contributing to our understanding of the distribution of albacore off the Pacific coast. Once again, tuna researchers and albacore fishermen alike are grateful to the officers and men of Radar Picket Squadron One for their continued interest and participation in the trolling program.

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California

ARTIFICIAL FISHING REEF MADE FROM QUARRY ROCK:

The first strictly "production model" artificial fishing reef has been built off Redondo Beach, Los Angeles County, the California Department of Fish and Game reported in February this year.

Patterned after earlier experimental models developed by the Department, the 625-foot quarry rock reef was financed by the County's fish and game fine money. State law requires that one-half of the money collected from fish and game violation fines be retained by the County to be used for fish and wildlife projects.

The reef area will be marked with buoys and opened to fishing when the fish population becomes sufficient to support a sport fishery, probably about July of this year.

The reef is expected to attract populations of sand bass, kelp bass, croakers, bonito, California halibut, and other species. In the experimental program, up to 1,300 fish have been counted at a single reef site.

The Wildlife Conservation Board experimented with three reefs in Santa Monica Bay in 1960. They were located in different areas and made of different materials. Old car bodies, streetcar bodies, artificial rock, and quarry rock were used in the experimental program, and the latter proved to attract the most fish. It is also more durable.

The Board has allocated funds for 4 quarry rock reefs, 2 off Orange County and 2 off San Diego County. Orange County also plans to build 2 reefs with fish and game fine money.

* * * * *

FLOODS DAMAGE FISH STOCKS OF HATCHERIES:

Three days of heavy rain at the end of January 1963 resulted in floods which caused large fish losses at three hatcheries of the California Department of Fish and Game. Affected were the Trinity River Hatchery in Trinity County, the Nimbus Hatchery on the American River in Sacramento County, and the Kern River Hatchery in Kern County.

Silt-laden water killed 350,000 of the remaining 800,000 king salmon fry at the Trinity River Hatchery. About 1,200,000 salmon fry already had been planted.

At the Nimbus Hatchery, floods and silt killed 230,000 yearling steelhead, thus wiping out a major part of the steelhead stock developed for planting in the American River in 1963. Only 58,000 yearling steelhead from Nimbus had been planted in January 1963 before the flood.

Most of the fish racks at Nimbus, which block fish passage upstream and divert fish into a ladder leading to the hatchery, were washed out. This is expected to reduce to a trickle the number of steelhead entering hatchery ponds for the rest of 1963, although 530 adult steelhead moved into the ponds during the storm. Salmon egg taking at Nimbus had about ended before the storm, and the floods did little damage to steelhead eggs or to salmon eggs and fry. The Hatchery hopes to be able to meet 1964 steelhead planting needs with the present supply of steelhead eggs.

At the Kern River Hatchery, about 225,000 trout which would have been stocked for fishermen to catch this summer were washed into the river. Only about 10,000 are expected to be recovered. Some of the trout lost will survive to provide good fishing this summer in the Isabella Reservoir and nearby waters. Fingerling trout will be transferred to Kern from other hatcheries, to be raised to meet catchable trout planting needs this summer.

The California Department of Fish and Game estimated that silt and floods would cause some damage to fish and spawn in the

streams, but higher flows of water would benefit other young fish by helping them out to sea. (California Department of Fish and Game, February 9, 1963.)

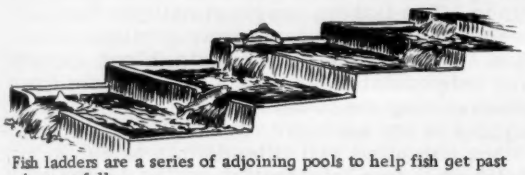
* * * * *

NEW FISHWAY MAY REESTABLISH KING SALMON RUN ON EEL RIVER:

The reconstructed fishway at Snow Mountain, which provides passage for salmon and steelhead trout over Van Arsdale Dam on the Eel River, is paying dividends, according to the California Department of Fish and Game.

King salmon have been counted climbing the fishway ladder for the first time in 12 years.

The old fishway at Van Arsdale Dam was built in the 1930's. Salmon runs above the



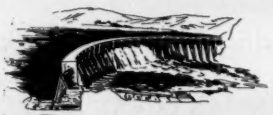
Fish ladders are a series of adjoining pools to help fish get past dams or falls.

dam began to decline when migrating fish found water spilling over the dam more attractive than the fishway. Salmon and steelhead would jump against the dam in a futile attempt to get over it. Steelhead would eventually make their way to the fishway, but the ladder's high steps and small pools made passage difficult. Many were taken from the ladder and trucked above the dam to help them on their way.

King salmon wouldn't even try the fishway. Salmon runs declined from the thousands to the hundreds, then virtually stopped in the 1950's.

The redesigned facility at Van Arsdale Dam channels fish directly into the fishway, so they have no opportunity to jump against the dam. The new fishway ladder is designed for jumps of 12 inches or less, compared to 18- to 24-inch jumps in the past. Pools are a minimum of three feet deep, compared to 18 to 24 inches in the old fishway.

The fishway was redesigned and rebuilt by the California Department of Fish and Game in an effort to restore the once heavy king salmon runs to spawning areas above the dam.



Cans--Shipments for Fishery Products, January-December 1962

The amount of steel and aluminum consumed to make cans shipped to fish and shellfish canning plants in 1962 was 6.3 percent above that used during 1961. The increase was due to a gain of 26.9 percent in combined shipments to the Eastern, Southern, and North Central Areas. The pack of Maine sardines in 1962 was much greater than in 1961. There was also an increase in the 1962 pack of tuna, salmon, and shrimp, but there was a decline in the California pack of mackerel, sardines, and anchovies.

In 1962, shipments to the Pacific or Western Area accounted for 68.3 percent of total shipments; shipments to the Eastern Area accounted for 28.5 percent; and shipments to

U. S. Domestic Shipments of Metal Cans for Fishery Products, 1962 and 1961
(Base Boxes of Metal Consumed in the Manufacture of Cans for Fishery Products)

Receiving Area	First Quarter		Second Quarter		Third Quarter 1/		Fourth Quarter		Total	
	1962	1961	1962	1961	1962	1961	1962	1961	1962	1961
East 2/	158,531	3/	189,556	3/	340,715	3/	191,087	3/	879,889	3/
Southern	13,403	3/	32,668	3/	21,765	3/	30,269	3/	98,105	3/
North Central	63	3/	29	3/	22	3/	26	3/	140	3/
Total 3/	171,997	193,197	222,253	215,510	362,502	180,504	221,382	181,861	978,134	771,072
West 4/	414,199	335,133	701,831	708,423	562,168	633,374	425,942	450,363	2,104,140	2,127,293
Total all Areas	586,196	528,330	924,084	923,933	924,670	813,878	647,324	632,224	3,082,274	2,898,365

1/Revised.
2/Includes Puerto Rico.
3/The grouping of States by geographic areas for reporting purposes was changed in 1962, so only total shipments in 1961 to the East, Southern, and North Central Areas are shown.
4/Includes Alaska and Hawaii.

the Southern Area accounted for most of the remaining 3.2 percent. Most of the fish-canning facilities are located in the Pacific Area.

Note: (1) Statistics cover all commercial and captive plants known to be producing cans. The data for 1961 cover only shipments of steel (tinplate) cans, but the data for 1962 cover shipments of steel and aluminum cans. It is believed that only a small amount of aluminum is being used in cans for fishery products at present. The tonnage equivalent figure for 1961 data is derived by use of the factor 23.0 base boxes per short ton of steel. The tonnage equivalent figure for 1962 data is derived by use of the factor 21.8 base boxes per short ton of steel. A "base box" is an area 31,360 square inches, equivalent to 112 sheets 14"x20" size.

(2) See Commercial Fisheries Review, March 1963 p. 21, August 1962 p. 17.

Central Pacific Fisheries Investigations

PLANS FOR PARTICIPATION IN INTERNATIONAL INDIAN OCEAN EXPEDITION:

The staff of the U. S. Bureau of Commercial Fisheries Biological Laboratory at Honolulu early in January this year was actively preparing to carry out research on the fishes and fishery resources of the Indian Ocean, as part of the United States participation in the International Indian Ocean Expedition. A massive scientific effort mounted with about 40 research vessels from 20 countries, the Expedition represents an attempt to apply to a single ocean basin the kind of complex international scientific cooperation that produced such fruitful results during the International Geophysical Year. The total field work is to extend from 1961 to 1964 and will encompass submarine geology, physical and chemical oceanography, meteorology, as well as the marine biology of the Indian Ocean.

The studies by the Bureau's Laboratory staff are centered around the United States Program in Biology and its research vessel the Anton Brunn. The Brunn is scheduled to make nine cruises into the Indian Ocean and adjacent seas from March 1963 to December 1964. The United States Program in Biology is being administered by the Woods Hole (Mass.) Oceanographic Institution.

The Bureau's Honolulu Laboratory will plan and implement that part of the United States biological program which pertains to fishery biology. For the off-shore waters of the Indian Ocean the Laboratory has outlined an extensive ecological study of the apex fish predators such as tunas and billfish. Since the Japanese have a commercial long-line fishery already operating in the Indian Ocean, the areas of high abundance of the commercially important fish species have been defined. The studies, therefore, will be centered around the collection of basic biological data to aid in understanding the interrelationship between species and to study distribution of the apex predators in relation to the environment. Since the most pronounced environmental feature in the Indian Ocean is the change in wind regime (southwest monsoon and northeast monsoon), the two cruises for the collection of data on apex predators were selected to cover these two periods. The first cruise (cruise 2 of the Anton Brunn) will extend from May to July 1963 during the southwest monsoon, while the second cruise (cruise 5) will extend from January to March 1964 during the northeast monsoon. Although surface trolling will be carried out during all daylight runs, the principal sampling tool for the apex predators on both cruises will be the tuna long-lines. The fishing program will produce whole samples for taxonomic studies, size and sex data on all fish caught, blood samples for subpopulation studies and materials for determining the feeding habits and spawning cycles of the apex predators. Furthermore, since sampling will extend down to 40° S. latitude, some information on the southern extent of the distribution of some of the apex predators will be obtained.

While the data obtained from the two cruises by the Anton Brunn will be limited in scope and application, several studies will be implemented by data from other sources covering a wider area of the Indian Ocean. Emphasis will be on extending the study of the distribution of tuna larvae and juveniles and obtaining blood samples for subpopulation studies from areas other than those covered during the two cruises. For the study on the relation of the apex predators and the environment plans include (1) an ocean-wide analysis of the large body of physical and chemical data which will be available at the end of the Expedition, (2) a study of the copepods of the genus Candacia as indicators of water masses, and (3) an analysis of all available catch and effort data for apex predators in the Indian Ocean in relation to the environment.

A second phase of the Laboratory's program in the Indian Ocean will be centered on the bottom fish and invertebrate resources of the Bay of Bengal and the Arabian Sea. A series of inshore-offshore transects with a 42-foot trawl will be made in the Bay of Ben-

gal during the March to May 1963 cruise of the Anton Brunn. A similar sampling program will be carried out in the Arabian Sea during the September to December 1963 cruise.

Crabs

NEW PROCESSING MACHINERY FOR BLUE CRABS BEING DEVELOPED:

A contract on developing mechanical means of debacking and cleaning cooked blue crabs is being financed with funds provided by the U.S. Bureau of Commercial Fisheries. The contract is being supervised by the Bureau's College Park, Md., Technology Laboratory, and originally called for a simply designed and relatively inexpensive shop-model machine that could be used by all crab-meat packers. The developmental research by the contractor has shown so much promise that the contract has been extended to include the production of a plant prototype machine.

In November 1962, the contractor met with the Laboratory staff to discuss the direction of future work. At that time it was learned that they had developed what might be termed a revolutionary concept of a machine for cleaning and preparing crab cores for the picker. Using this new principle of core preparation, it looked entirely possible to make a machine that was so simple it could be manufactured for less than $2,000. This compares with a cost of $10,000 or more for any one of several machines with similar functions that have been developed by private inventors in recent years.

It developed during the meetings that the contractor's engineers had found the solution to the problem, and were so far along with the development of machinery that it would be a mistake to stop at the shop model stage. It was evident that with additional time of about two months and some extra funds the contractor would be able to go directly to the plant prototype. The proposed prototype design also included a concrete and apparently workable idea for extracting lump crab meat by machine. Following the November 1962 meetings between the Laboratory staff and the contractor's engineers, approval was obtained in late January this year to begin on the final phases of this machine development.

The extension of the contract calls for the design and production of a prototype machine for handling cooked crabs, at the rate of about one per second, and producing a cleaned core in such a manner that the backfin lump can be readily removed. Prior to hitting upon the principle of the present cleaning machine, considerable work had been done on an automatic "orienter" that would take a mass of cooked crabs and feed them into a debacker-cleaner in a set position--for example, backs up, eyes to the left, if this was the desired orientation for the next step. However the design of this machine was fairly complex and consequently it has been bypassed for the present, it being felt that most plants would find it much more economical to use two or three workers to orient visually and feed manually the debacker-cleaning machine.

With the contractor's efforts concentrated on the final design and fabrication of the cleaning machine only, it was estimated, that this could be completed in early April. As soon as the machine can be installed in a plant, and the spring run of crabs starts to provide working material, interested industry members will be invited to observe the machine in operation. The demonstration will be followed by a meeting with an industry committee to discuss and approve plans for the next steps toward mechanization. Depending on the priority assigned by this committee, the "orienter" described above might be completed next, or the next steps might more logically be, first the development of a mechanical lump picker, then the flake meat picker. Both of these machines are in what might be described as an advanced conceptual stage.

Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES, JANUARY-SEPTEMBER 1962:

Fresh and Frozen: For the use of the Armed Forces under the Department of Defense, more fresh and frozen fishery products were purchased by the Defense Subsistence Supply Centers during the third quarter of 1962 than in the same period of 1961. The increase was 4.3 percent in quantity and 38.4

Table 1 - Fresh and Frozen Fishery Products Purchased by Defense Subsistence Supply Centers, July-September 1962 with Comparisons

QUANTITY				VALUE			
July-Sept.		Jan.-Sept.		July-Sept.		Jan.-Sept.	
1962	1961	1962	1961	1962	1961	1962	1961
(1,000 lbs.)				($1,000)			
5,961	5,715	17,934	16,587	4,213	3,044	10,975	8,355

percent in value. During the first nine months of 1962, purchases were up 8.1 percent in quantity and 31.4 percent in value, as compared with the same period in 1961. Because of the purchase of higher-priced fishery products and an increase in the price of most fishery products, the value increased more than the quantity.

Canned: Purchases of canned fishery products for the use of the Armed Forces in the third quarter of 1962 were extremely

Table 2 - Canned Fishery Products Purchased by Defense Subsistence Supply Centers, July-September 1962 with Comparisons

Product	QUANTITY				VALUE			
	July-Sept.		Jan.-Sept.		July-Sept.		Jan.-Sept.	
	1962	1961	1962	1961	1962	1961	1962	1961
	(1,000 lbs.)				($1,000)			
Tuna	1	1,731	3,708	4,393	1/	765	2,062	1,940
Salmon	1	1,401	1,016	1,403	1/	891	638	893
Sardines	15	31	65	121	6	13	31	57

1/Less than $1,000.

light. In the first 9 months of 1962 purchases of the three principal canned fishery products (tuna, salmon, and sardines) were down 19.1 percent in quantity and 5.5 percent in value as compared with the same period in 1961.

Note: Armed Forces installations generally make some local purchases not included in the data given; actual total purchases are higher than indicated because local purchases are not obtainable.

Fish Oils

MOLECULAR DISTILLATION AIDS RESEARCH ON POLYUNSATURATES:

During 1962, close to 4,000 pounds of crude fish oil and fish oil derivatives such as fatty acids and fatty esters were refined by adsorptive bleaching and molecular distillation at the Seattle Technological Laboratory of the U. S. Bureau of Commercial Fisheries. The material processed was distributed to other laboratories for research purposes.

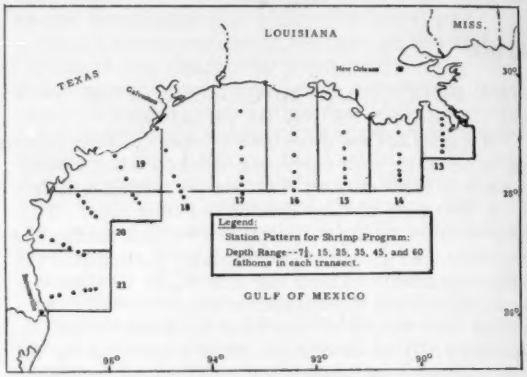
Molecular distillation has provided a means of obtaining oil samples with a higher percentage of polyunsaturates which are of particular interest to researchers.

Although most of the material was sent to laboratories interested in nutritional research, some was also sent to laboratories that were interested in chemical derivatives and other means of commercial utilization.

Gulf Fishery Investigations

SHRIMP DISTRIBUTION STUDIES:

M/V "Gus III" Cruise GUS-1 (January 22-February 5, 1963): Catches were generally light during this cruise off the coast of Lou-



Shows the station pattern for Cruise GUS-1 of the chartered research vessel Gus III, January 22-February 5, 1963.

isiana and Texas by the chartered research vessel Gus III. The vessel (operated by the Galveston Biological Laboratory of the U. S. Bureau of Commercial Fisheries) was engaged in a continuing study of the distribution of shrimp in the Gulf of Mexico.

Eight statistical areas (13, 14, 15, 16, 17, 18, 19, and 20) were covered. Because of severe weather, it was not possible to fish at all scheduled stations. But one 3-hour tow with a 45-foot shrimp trawl was made in each of 3 depth ranges (0-20, 20-40, and 40-60 fathoms) in all areas, except area 20.

The best single catch per 3-hour tow was 51 pounds of 12-15 count brown shrimp taken from 20-40 fathoms in statistical area 17. The other areas yielded fair catches of brown shrimp as follows: 34 pounds (31-40 count) from the 0-20 fathom range in area 18; 22 pounds (15-20 count) from the 0-20 fathom depth in area 19; 21 pounds (12-15 count) from 20-40 fathoms in area 20; 12 pounds (21-25 count) from the 20-40 fathom range in area 13; and 12 pounds (12-15 count) from 40-60 fathoms in area 14.

Areas 13 and 15 were the only areas producing more than a scattering of white shrimp. A catch of 13 pounds of 26-30 count white shrimp was taken from the 0-20 fathom range

in area 13. The white shrimp catch in area 15 consisted of 15 pounds (31-40 count) from the 0-20 fathom range and 15 pounds (21-25 count) caught at depths up to 40 fathoms.

Pink shrimp were taken at only 3 stations; the catch in each case was less than 1 pound.

Notes: (1) Shrimp catches are heads-on weight, shrimp sizes are the number of heads-off shrimp per pound.
(2) See Commercial Fisheries Review, February 1962 p. 37.

Industrial Fishery Products

FISH MEAL MARKET TRENDS IN SOUTHEASTERN STATES SURVEYED:

In late January and early February this year, a U. S. Bureau of Commercial Fisheries animal nutritionist, visited scientists at the Arkansas Agricultural Experiment Station and representatives of mixed feed corporations at various localities in Arkansas and southern Missouri and at Memphis, Tenn. He made these visits following his attendance at the Southeastern Poultry and Egg Association Convention at Atlanta, Ga., January 28 to 30.

At the Convention, it was pointed out that a general trend toward increased egg production in the Southeastern States is in evidence. However, this growth of the egg production industry appears not to be at the expense of the broiler industry; the latter is growing also but at a decelerating rate. Much of the new egg production can be absorbed by the producing States. For example, Florida is leading the present expansion but does not as yet produce enough eggs to satisfy its own needs. This expansion will result in some increase in utilization of fish reduction products. Poultry breeder rations are usually supplied with fairly liberal proportions of fish meal, and laying rations usually contain some fish meal although the concentration of the meal in layer rations is ordinarily only a fraction of 1 percent. Thus the long-term prospect appears to be that demand for fish meal in the Southeast will increase.

Investigators at the Arkansas Agricultural Experiment Station reported to the animal nutritionist further progress toward obtaining the fish unidentified growth factors in highly concentrated form. However, until they can isolate the factors in pure chemical form, analyze them, and produce them by chemical synthesis, fish products will remain the most reliable source of these factors.

Nutritionists employed by mixed feed companies are showing a great deal of interest in methods of determining the quality of protein in fish meal. Some of them hope to be able, eventually, to determine the quality of the protein in each shipment of fish meal they buy.

* * * * *

MORE FEDERAL SPECIFICATIONS FOR USE OF FISH OIL IN PAINTS REQUIRED:

The use, procurement, and testing of paints and other organic coatings by the Federal Government were surveyed by a chemical engineer of the U. S. Bureau of Commercial Fisheries. He learned that there is no Federal Specification for fish oil for use in organic coatings.

There are several Federal Specifications which permit the use of fish oil in paint, varnish, and related materials, provided the products meet performance specifications. They are:

(1) TT-P-0085a (DOD); Interim Federal Specification; Paint, Reflectorized, for Airfield Runaway Marking (Drop-in-Type).

(2) TT-P-00530 (NAVY-Ships); Interim Federal Specification; Coating Compound, Rust Inhibitive, Fish Oil Base.

(3) TT-P-664a; Federal Specification; Primer Coating, Synthetic, Rust-Inhibiting, Lacquer-Resisting.

(4) TT-P-666a; Federal Specification; Primer Coating, Zinc Yellow, for Aluminum and Magnesium Surfaces.

(5) TT-P-781a; Federal Specification; Putty and Elastic Compound; (for) Metal Sash Glazing.

The above list can be expanded, once the basic fish oil quality is covered by specification. The Government agencies using the paints will require proof of superior performance for unit cost or equal performance at lower cost compared to products covered by existing specifications.

The next step required in establishing a Federal Specification for fish oil for use in organic coatings is the drawing up of a sug-

gested specification patterned after Federal Specifications TT-S-600, Soybean Oil (for use in organic coatings) or TT-L-215a, Linseed Oil, Raw (for use in organic coatings).

* * * * *

U.S. FISH MEAL AND SOLUBLES:

Production and Imports, 1961-62: Based on domestic production and imports, the United States available supply of fish meal for 1962 was 31,461 short tons (or 6.2 percent) greater than during 1961. Domestic production was 3,001 tons (or 1.0 percent) less and imports were 34,462 tons (or 15.8 percent) greater than in 1961. Peru continued to lead other countries with shipments of 186,249 tons during 1962--34,810 tons above the imports in 1961.

The United States supply of fish solubles (including homogenized fish) during 1962 was 10,743 tons more than during 1961. Domestic production increased 10.0 percent, but imports dropped 6.4 percent.

U. S. Supply of Fish Meal and Solubles, 1961-62

Item	1/ 1962	1961
	...(Short Tons)...	
Fish Meal and Scrap:		
Domestic production:		
Menhaden	243,839	247,551
Tuna and mackerel	20,874	21,243
Herring	3,543	5,268
Other	20,080	17,275
Total production	288,336	291,337
Imports:		
Canada	42,806	38,218
Peru	186,249	151,439
Chile	9,247	12,074
Angola	-	1,543
So. Africa Republic	10,084	13,026
Other countries	3,921	1,545
Total imports	252,307	217,845
Available fish meal supply	540,643	509,182
Fish Solubles:		
Domestic production 2/	123,415	112,241
Imports:		
Canada	1,335	1,001
So. Africa Republic	1,717	1,351
Other countries	3,256	4,387
Total imports	6,308	6,739
Available fish solubles supply	129,723	118,980

1/Preliminary.
2/50-percent solids. Includes production of homogenized condensed fish.

* * * * *

U.S. FISH MEAL, OIL, AND SOLUBLES:

Major Indicators for U.S. Supply, January 1963: United States fish meal and fish oil production in January 1963 was lower by 26.8 percent and 46.2 percent, respectively, as compared with January 1962. Fish solubles production decreased 8.4 percent.

Major Indicators for U.S. Supply of Fish Meal, Solubles, and Oil, January 1963

Item and Period	1963	1962	1961	1960	1959
	..... (Short Tons)				
Fish Meal:					
Production 1/:					
March	-	2,495	2,751	2,955	2,122
February	-	2,066	2,071	1,923	2,128
January	2,000	2,732	2,723	2,443	3,095
Jan.-Dec. prelim. totals 2/	-	288,336	289,039	257,969	275,396
Jan.-Dec. final tots.	-	-	311,265	290,137	306,551
Imports:					
March	-	18,528	20,458	18,652	16,719
February	-	18,819	14,344	8,081	19,463
January	-	25,427	9,531	8,571	19,700
Jan.-Dec.	-	252,307	217,845	131,561	132,825
Fish Solubles:					
Production 3/:					
March	-	1,903	2,564	2,462	2,382
February	-	1,566	1,650	1,812	2,211
January	1,500	1,637	1,800	1,697	1,913
Jan.-Dec.	-	123,402	112,241	98,929	165,359
Imports:					
March	-	308	135	87	410
February	-	2,249	155	1,875	398
January	-	273	219	214	1,567
Jan.-Dec. totals	-	6,308	6,739	3,174	26,630
	.....(1,000 Gallons)				
Fish Body Oils:					
Production:					
March	-	42	63	66	42
February	-	49	44	51	38
January	50	93	55	46	64
Jan.-Dec. prelim. totals 4/	-	33,178	33,471	26,690	24,418
Jan.-Dec. final tots.	-	-	34,409	27,853	24,945
Exports:					
March	-	2,556	753	421	600
February	-	2,886	2,327	3,177	999
January	-	679	1,793	276	898
Jan.-Dec.	-	16,407	16,331	19,154	19,264

1/Does not include crab meat, shrimp, and misc. meals.
2/Preliminary data computed from monthly data. Fish meal production reported currently comprised 90 percent for 1959, 89 percent for 1960, and 92 percent for 1961.
3/Includes homogenized fish.
4/Preliminary data computed from monthly data. Represents over 95 percent of the total production.
Note: Data for 1962 and 1963 are preliminary.

* * * * *

Production, December 1962: In December 1962, production of fish meal (2,349 tons) was only a fraction of the 12,763 tons produced in December 1961. Oil production also followed this pattern--only 78,099 gallons in December 1962 compared with 1.5 million gallons for December 1961. Bad weather over coastal North Carolina was responsible for the failure of the menhaden fishery in December 1962. Production of fish solubles and homogenized condensed fish in December 1962 was considerably less than in December 1961.

Table 1 - U. S. Production of Fish Meal, Oil, and Solubles, December 1962 1/ with Comparisons

Product	December		Total	
	1/1962	1961	1/1962	1961
	(Short Tons)			
Fish Meal and Scrap:				
Herring	-	-	3,543	5,268
Menhaden 2/	308	9,407	243,839	247,551
Sardine, Pacific	-	650	743	2,518
Tuna and mackerel	1,463	2,053	20,874	21,243
Unclassified	578	653	19,337	14,757
Total	2,349	12,763	288,336	291,337
Shellfish, marine-animal meal and scrap	3/	3/	3/	19,928
Grand total meal and scrap	3/	3/	3/	311,265
Fish solubles	1,481	4,596	112,764	100,551
Homogenized condensed fish	132	340	10,651	11,690
	(Gallons)			
Oil, body:				
Herring	-	-	666,503	818,017
Menhaden 2/	8,913	1,352,942	30,548,560	31,355,570
Sardine, Pacific	-	24,844	23,589	86,167
Tuna and mackerel	44,724	86,639	621,903	762,509
Other (including whale)	24,462	27,492	4/1,317,612	1,386,542
Total oil	78,099	1,491,917	33,178,167	34,408,805

1/Preliminary data.
2/Includes a small quantity produced from thread herring.
3/Not available on a monthly basis.
4/Includes estimates for those firms which do not normally report on a monthly basis.

Inventions

NEW FISH HOOK EXTRACTING DEVICE PATENTED:

The inventor of a new fish hook extracting device claims it will remove a fish hook without tearing the body of a fish. It is said to be simple, effective, and inexpensive. (Patent Number 3,027,676, U. S. Patent Office Classification Number 43-43.16, granted Earl Buttemeier, 4411 N. Greenview, Chicago 40, Ill.)

Maine Sardines

CANNED STOCKS, JANUARY 1, 1963:

Current canned stocks reflect the 1962 comeback of the Maine sardine after the drastic decline in the catch and pack in 1961. Canners' stocks of Maine sardines on Jan. 1, 1963, were 948,000 cases greater than those of Jan. 1, 1962, but only 63,000 cases above stocks on hand two years ago on Jan. 1, 1961. Distributors' stocks of canned Maine sardines were up 23.8 percent from stocks on hand Jan. 1, 1962, and 2.6 percent from those on hand Jan. 1, 1961.

On April 15, 1962, carryover stocks at the canners' level amounted to about 33,000 cases. Adding the 1962 season pack of 2,116,000 cases results in a total supply of 2,149,000 cases as of January 1, 1963--up 89.8 percent from the total supply reported January 1, 1962, but down 7.9 percent from the total supply on January 1, 1961. Shipments between April 15, 1962 and January 1, 1963, amounted to 1,057,000 cases, up slightly from shipments of 988,000 cases during the comparable period in the previous year.

Table 2 - U. S. Foreign Trade in Selected Industrial Products, December 1962 1/ with Comparisons

Product	Oct.		Nov.		Dec.		Total	
	1/1962	1961	1/1962	1961	1/1962	1961	1/1962	1961
	(Short Tons)							
Imports:								
Fish meal and scrap	12,732	9,425	11,904	25,649	18,977	23,268	252,307	217,845
Fish solubles	290	110	435	3,649	387	472	6,308	6,739
	(Gallons)							
Whale oil, sperm (crude and refined)	-	2,318,044	3,674,921	92,756	516,413	458,027	8,932,083	7,807,625
	(Pounds)							
Exports:								
Fish and fish liver oils	219,241	15,201,869	171,127	1,424,773	171,813	10,484,236	123,049,705	122,485,721
Whale and sperm oil	30,300	49,452	3,328	902,160	705,704	84,110	2,696,522	1,205,674

1/Preliminary data.

Although the 1962 production of fish meal and oil was somewhat less than in 1961, the producers had a satisfactory year. Fish meal manufactured in 1962 totaled 288,336 tons--about 3,000 tons less than in 1961. The yield of oil (33 million gallons) was about 1.2 million gallons less than during the previous year. The year's production of fish solubles (112,764 tons) was heavier than the amount reported in 1961 (100,551 tons). Homogenized condensed fish production in 1962 amounted to 10,651 tons--about 1,000 tons less than in the previous year.

Table 1 - Canned Maine Sardines--Wholesale Distributors' and Canners' Stocks, January 1, 1963, with Comparisons

Type	Unit	1/1/63	1/1/62	1/1/61
Distributors . . .	actual cases	239,000	193,000	233,000
Canners	std. cases 1/	1,092,000	144,000	1,029,000

1/100 3¼-oz. cans equal one standard case.
Source: U. S. Bureau of the Census, Canned Food Report, January 1, 1963.

Table 2 - Canned Maine Sardines--Season Supply as of January 1, 1963, with Comparisons

Item	1963	1962	1961
	.... (Std. Cases 1/)		
Canners' carryover stocks on April 15 2/	33,000	457,000	335,000
Season pack 2/	2,116,000	675,000	1,998,000
Total supply as of Jan. 1 .	2,149,000	1,132,000	2,333,000

1/100 3¼-oz. cans equal one standard case.
2/The usual legal packing season in Maine, extending from April 15 to Dec. 1, was in effect during the 1960 and 1961 season. The 1962 season was extended to 13 months--Dec. 2, 1961-Jan. 1, 1963--but the 1962 pack canned before April 15 was insignificant.

North Pacific

Exploratory Fishery Program

SURVEY OF DEEP-WATER MARINE FAUNA OFF MOUTH OF COLUMBIA RIVER CONTINUED:

M/V "John N. Cobb" Cruise 57: The ninth in a series of cruises designed to study deep-water marine fauna at stations established along a track line southwest of the mouth of

The U. S. Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb.

the Columbia River was completed on February 6, 1963, by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb. The trip was part of a cooperative study with the Atomic Energy Commission. Six of the cruises in the series were made by the Bureau's chartered vessel Commando and three were made by the John N. Cobb.

A standard 400-mesh eastern commercial otter trawl with a small-mesh liner in the cod end was used to sample fauna at all 18 stations (with the exception of the 275-fathom station) out to 450 fathoms. Because of adverse weather conditions, the vessel was able to study only one station (1,000 fathoms) of the nine stations at depths greater than 450 fathoms.

Sablefish (Anoplopoma fimbria), turbot (Atheresthes stomias), ocean perch (Sebastodes alutus), dogfish (Squalus acanthias), rex sole (Glyptocephalus zachirus), and Columbia River smelt (Thaleichthys pacificus) were the species of vertebrates found in greatest abundance at the stations surveyed. Columbia River smelt and rex sole dominated the catches from 50 to 100 fathoms, while ocean perch and dogfish dominated the catches from 125 to 175 fathoms. A relatively large catch (1,426 pounds of ocean perch and 1,056 pounds of dogfish per hour of trawling) occurred at the 150-fathom station. Sablefish was the main species caught between 200 and 450 fathoms. Turbot was found to be plentiful in the 175 to 250 fathom range and the idiot rockfish (Sebastolobus) from 350 to 450 fathoms. The most striking difference noted in the fish fauna during the cruise as compared to previous cruises was the small amount of Dover sole (Microstomus pacificus) in all the catches and the dominance of smelt and dogfish at the shallower stations.

In addition to sampling the fauna at each station, bottom temperatures, salinities, and bottom core samples were taken. The core samples were frozen for analysis by the Oceanography Department of the University of Washington.

Samples of fish collected for the Atomic Energy Commission were delivered to the Laboratory of Radiation Biology, University of Washington.

Over 1,000 sablefish and a few Dover sole were tagged by personnel from the Oregon Fish Commission who were aboard the vessel during part of the survey.

Also, the study on marine bacteria by personnel from the College of Fisheries, University of Washington was continued.

Note: See Commercial Fisheries Review, February 1962 p. 42.

Oceanography

NEW RESEARCH SUBMARINE:

The U. S. Fish and Wildlife Service's first submarine, a 2-man, 12-foot research vessel,

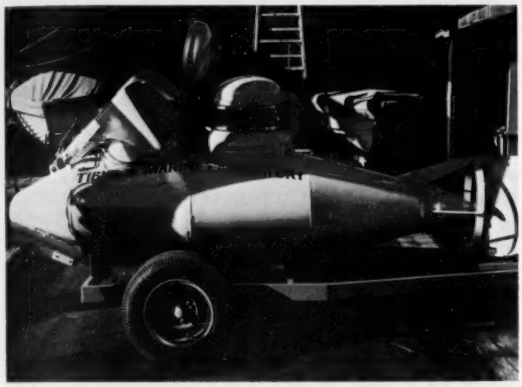


Fig. 1 - This 1-ton, 12-foot undersea research vessel can be hauled by trailer between fishery research assignments.

was delivered to the Fish and Wildlife Service Marine Laboratory at Tiburon, Calif., on February 18, 1963. Valued at about $9,000, it is destined for a major role in undersea studies by the Bureau of Sport Fisheries and Wildlife.

The torpedo-shaped craft is a "dry" submarine. This means that the occupants--one operator and one passenger--are enclosed and protected from the sea. A major

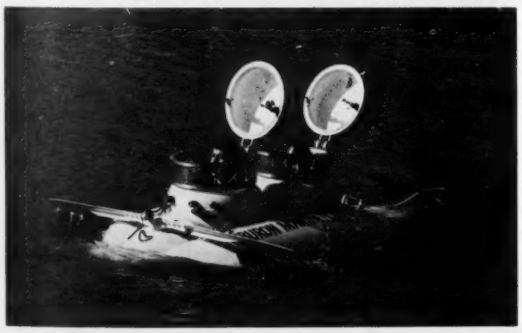


Fig. 2 - Two biologists from the Laboratory make a trial run in the 12-foot undersea research vessel.

problem in marine game fish research has been the inability of scientists to enter the undersea environment safely to make direct observations. By using the new battery-powered submarine, research biologists will now be able to accompany electronic and photographic equipment under water to record and observe marine creatures for extended periods.

Capable of operating to depths of 300 feet, the 2,000-pound underwater craft offers each occupant 360 degree viewing. It is radio-equipped and can cruise submerged for 10 hours at speeds ranging from 2 to 6 knots.

The submarine will be used for observing schooling and feeding behavior of fish, surveys of bottom conditions, locating concentrations of fish, and studies of shark behavior.

There are two conning towers on the submarine, one for each occupant. The front tower is canted forward and down to provide increased visibility directly ahead of the craft and of the sea bottom. The submarine is controlled by an airplane-type stick which permits rapid movement of hydroplanes and rudder at all speeds. Ballast tank controls and trim tanks permit the submarine to operate at positive, neutral, and negative buoyancy. It has two forward and two reverse speeds. An air filter system removes carbon dioxide, permitting the occupants to breath clean air.

* * * * *

SECOND FOLIO OF NORTH ATLANTIC MARINE ENVIRONMENT SERIAL ATLAS:

Some 96,000 temperature readings taken at a depth of 200 meters throughout the North Atlantic Ocean have been organized and their distributions mapped in an atlas Folio issued on March 7, 1963, by the American Geographical Society.

The Folio is the second in a series being published by the Society under the general title, "Serial Atlas of the Marine Environment." The new Folio is the work of a scientist of the Woods Hole Oceanographic Institution, and represents data collected by the Institution as well as data from various agencies, including the National Oceanographic Data Center in Washington, D. C., and the Canadian Naval Research Establishment at Halifax, N. S.

The Folio consists of nine color plates, a brief explanatory text by the scientist, and 11 pages of statistical tables of the source data. The maps show average temperatures, maximum range of temperatures, anomalies, and seasonal distribution of the data.

The Serial Atlas, a type of atlas never before attempted in this country, was introduced

last year with the publication of the first Folio in the series, a study of sea surface temperatures in the Western North Atlantic. The Atlas is planned to effect interdisciplinary communication, to provide scientists with an essential means of making comparative studies, and to uncover areas of ignorance as well as of knowledge.

Each Folio in the series is a complete study in itself. Thus a more comprehensive picture of all aspects of the sea (physical, biological, chemical, and geological) is expected gradually to unfold. Scientists hope that many variables, so far undetected, will be pinpointed and that guide lines for future research will emerge. Among other Folios in preparation or in prospect are temperature studies at other critical depths; the detailed bathymetry of the North Atlantic and the Arctic Basin; the directions and velocities of winds and currents in the North Atlantic; a study of the seasonal distribution of groundfish over Georges Bank and the Gulf of Maine; and an environment study of a particular species of clam, Spisula polynyma.

"The Serial Atlas of the Marine Environment" is an international project, with scientists on both sides of the Atlantic, in all disciplines dealing with the sea, participating. An advisory group will guide the project and recommend the suitability of topics.

Base maps, specially prepared by the American Geographical Society, are distributed to the contributing scientists, who use them as worksheets on which to plot and analyze their data. Contributions are then submitted to the society whose responsibility is to make final decisions regarding the form of presentations, to prepare the finished maps, and to edit the Folios for final publication.

Oregon

FISH PASSAGE FACILITIES OVER PELTON DAM EVALUATED:

A report covering an evaluation study of the fish passage facilities at a private power company's Pelton Dam on the Deschutes River was announced on February 27, by a 5-man steering committee composed of Oregon Fish Commission officials, scientists of the U. S. Bureau of Sport Fisheries and Wildlife and U. S. Bureau of Commercial Fisheries, and a representative of the power company.

The report describes the results of a 3-year study initiated in May 1959 under an agreement between the State and Federal agencies and the company, which provided the $114,000 required for the project.

Under the supervision of the Committee, the field work and data analysis were performed by the Fish Commission with assistance from the power company. Much valuable information was obtained with respect to fish passage problems as well as incidental material that will be of future value.

The permanent fish facilities at the Pelton project, which have been operable since 1958, consist of a fish ladder 2.8 miles long and a trap-and-truck combination for upstream-migrant fish. The downstream-migrant collection system at the dam introduces the fish into the ladder, which carries them to the river below the project.

Although the upstream-migrant collection system functioned satisfactorily and adult fish readily entered the trap, they were often reluctant to ascend the fish ladder during the summer months for reasons still to be determined.

The downstream migrants moved into and through the artificial outlet or "skimmer" as intended. Few wild fish left through the deeply submerged power tunnel or other possible exits.

The downstream passage efficiency for salmon was judged favorable in 1960, but seemed unfavorable in 1961. On examination of the records, however, it appeared that sufficient numbers of downstream migrants occurred to maintain the runs. But this did not appear to be true in the case of steelhead trout. In the two years examined, the one returnee per parent fish required to maintain the stocks was not achieved. This situation may or may not continue. Trends of abundance of those fish are affected by many factors other than the dam.

Counts of all fish, going both up and downstream past the Pelton project, were maintained continuously both before and since the evaluation period and will continue in the

future. Studies of the counts will provide additional information. Following completion of the Round Butte project immediately upstream, further evaluation of the Pelton fish passage facilities will be included in a four-year study of the Round Butte installation, which will also be financed by the power company.

* * * * *

NEW DIRECTOR OF FISHERIES RESEARCH APPOINTED:

The Oregon Fish Commission Director announced on February 20, 1963, the appointment of Dr. Donald W. Chapman as Director of Research, filling the position left by Sigurd J. Westrheim, now with the Fisheries Board of Canada in Nanaimo, B. C.

Chapman received his Bachelor of Science degree in Forest Management from Oregon State University in 1953, Master of Science degree in Fisheries, 1957, Oregon State University, and Ph.D. in Fisheries, 1961, also from Oregon State.

A veteran, Chapman has served as Research Assistant with the Oregon Cooperative Wildlife Research Unit; Coordinating Biologist for the Governor's Natural Resources Committee; and Coordinator, Alsea Watershed Study. At the time of his appointment he was an Assistant Professor of Fish and Game Management at Oregon State University. Since December 1960, Chapman has also been Executive Secretary of the Water Resource Research Institute.

Several of Chapman's writings dealing mainly with stream ecology as it pertains to silver salmon and steelhead have appeared in professional scientific journals. He will be headquartered at Clackamas, the Commission's main research center.

Shrimp

UNITED STATES SHRIMP SUPPLY INDICATORS, FEBRUARY 1963:

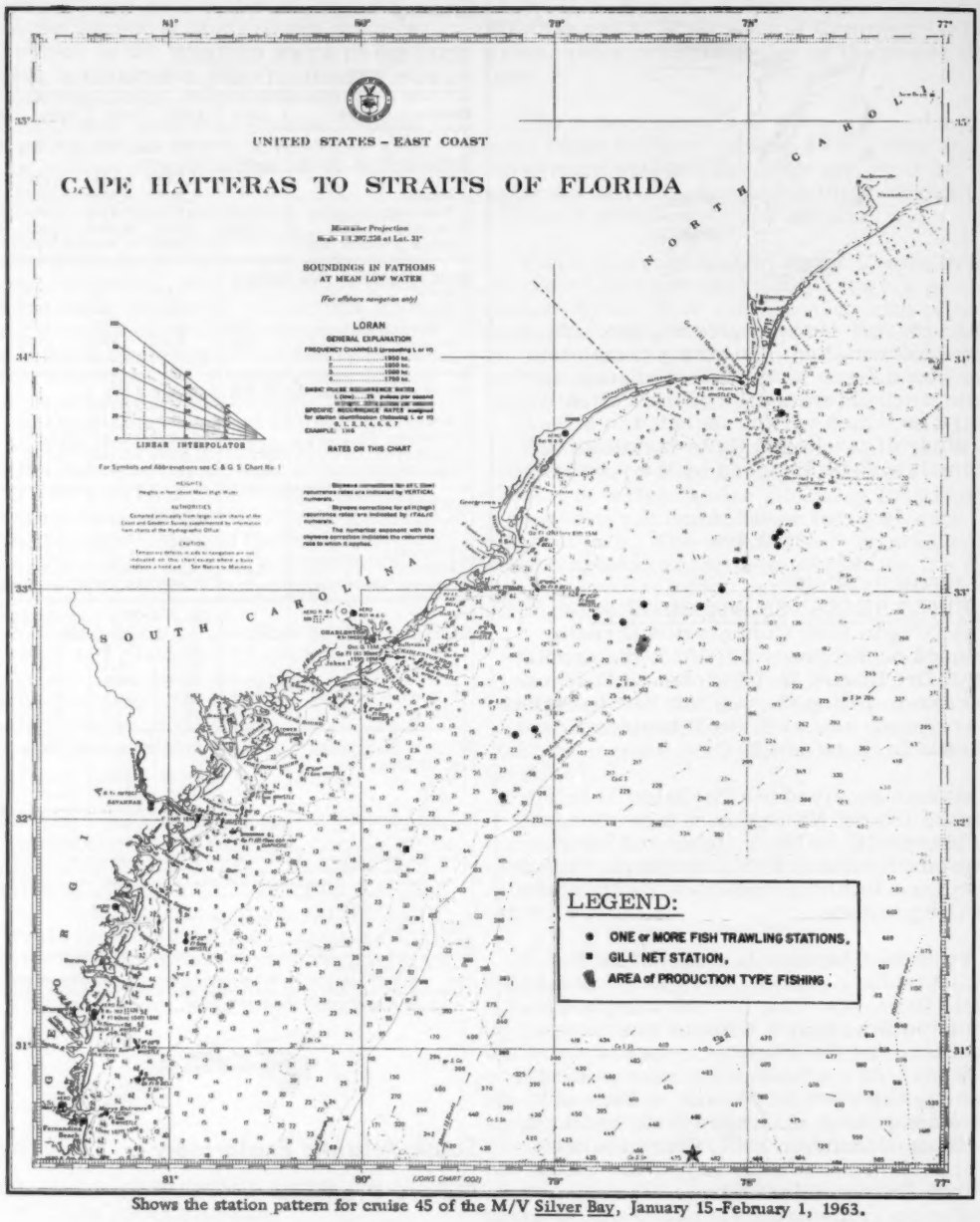
Item and Period	1963	1962	1961	1960	1959
			(1,000 Lbs., Heads-Off)		
Total landings, So. Atl. and Gulf States:					
April	-	3,349	3,171	4,728	3,595
March	-	3,317	4,754	4,099	2,950
February	4,100	4,125	3,910	3,784	3,227
January	4,000	3,828	5,686	5,402	4,308
January-December	-	105,100	91,396	141,035	130,660
Quantity canned, Gulf States 1/:					
April	-	12	9	66	74
March	-	86	35	117	85
February	300	241	90	204	124
January	540	492	183	266	283
January-December	-	23,210	14,500	26,394	22,659
Frozen inventories (as of end of each mo.) 2/:					
April 30	-	15,637	27,492	20,502	23,331
March 31	-	16,607	31,345	23,232	24,893
February 28	3/	19,012	37,612	29,063	27,555
January 31	4/29,263	21,328	37,842	34,332	30,858
January 1	31,577	28,372	40,913	37,866	32,844
Imports 5/:					
April	-	10,219	9,208	7,733	9,051
March	-	9,658	10,347	8,545	8,492
February	3/	10,599	8,932	7,657	7,481
January	13,139	12,907	12,338	8,596	8,238
January-December	-	141,384	126,268	113,418	106,555
			(¢/lb., 26-30 Count, Heads-Off)		
Ex-vessel price, all species, So. Atl. & Gulf Ports:					
May	-	83.7	52.8	62.9	63.3
April	-	82.2	55.4	60.6	65.2
March	-	80.9	56.0	56.3	67.6
February	87-95	78.9	53.5	51.8	69.6
January	86-93	76.3	52.5	49.4	70.9
Wholesale price for froz. domestic brown species (5-lb. pkg.) at Chicago, Ill.:					
May	-	96-103	67-69	74-77	70-76
April	-	94-97	69-70	74-75	75-82
March	-	94-95	69-71	65-68	81-83
February	102-106	93-95	69-71	65-67	82-87
January	102-106	91-94	69-71	64-66	86-88

1/Pounds of headless shrimp determined by multiplying the number of standard cases by 30.3. (Data for canned shrimp beginning with February 1963 have been revised on the basis of a new conversion factor--30.3 lbs. per case. Data for January 1963 and preceding months were determined by multiplying the number of standard cases by 33.0 lbs. per case.)
2/Raw headless only; excludes breaded, peeled and deveined, etc.
3/Not available.
4/Includes 397,000 pounds for firms not reported previously.
5/Includes fresh, frozen, canned, dried, and other shrimp products as reported by the Bureau of the Census.
Note: Data for 1963 and 1962 are preliminary. February 1963 data estimated from information published daily by the New Orleans Fishery Market News Service. To convert shrimp to heads-on weight multiply by 1.68.

South Atlantic Exploratory Fishery Program

EXPLORATORY TRAWLING FOR COMMERCIAL SPECIES OFF NORTH AND SOUTH CAROLINA CONTINUED:

M/V "Silver Bay" Cruise 45 (January-February 1, 1963): The assessment of the seasonal availability to otter trawls of snap-



Shows the station pattern for cruise 45 of the M/V Silver Bay, January 15-February 1, 1963.

pers, groupers, and other commercially valuable species, was continued during an 18-day cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Silver Bay.

Catches of commercial species off Cape Romain, S. C., in 14 to 24 fathoms ranged from 525 to 3,057 pounds per 90-minute drag. Best fishing was in 20 to 24 fathoms where 9 consecutive drags yielded a total marketable catch of 15,396 pounds of fish. Additional drags in 17 to 18 fathoms yielded catches of from 280 to 900 pounds of small (2 to 3 pound average) vermillion snapper (Rhomboplites aurorubens).

Scup (Stenotomus chrysops) averaging three to the pound dominated the catches off Southport, N. C. Best catches in that area were at depths of 17 to 18 fathoms, where they averaged over 1,000 pounds. Catches ranging from 260 to 2,000 pounds of scup were obtained from 90-minute drags.

Off Cape Romain, a roller-rigged 80/100-foot nylon fish trawl was fished with 10-foot bracket doors. Off Southport, a 70/90-foot nylon trawl was fished with 8-foot bracket doors and spacers rather than rollers on the footrope. Fishing was carried out mostly in daylight hours, and drags were made when whiteline recorder tracings indicated presence of fish.

In addition to trawling operations, three surface gillnet sets were made, with little success; and 370 sea-bed and 370 sea-surface drift bottles were released at 10-mile intervals in cooperation with personnel of the Bureau's Biological Laboratory at Beaufort, N. C.

Note: See Commercial Fisheries Review, October 1962 p. 30.

Storm Warnings

FASTER WARNINGS MADE POSSIBLE BY NEW COMPUTING DEVICE:

A storm radar data processor called STRADAP has been developed to replace time-consuming interpretation and transmission of radar storm data. The new electronic setup produces storm maps showing the intensity and height of a storm. The intensity of a storm is rated on a numbered scale of 1 to 7. Storm tops are shown on another map scaled in units of 10,000 feet. It is planned to use STRADAP to transmit storm information from all parts of the country to a national center in less than 20 minutes. (Science News Letter, February 2, 1963.)

Tagging

RADIONUCLIDES OFFER POSSIBILITIES FOR FISH MARKING:

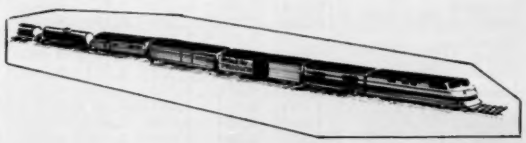
Fish marking possibilities using radionuclides are being studied by Atomic Energy Commission biologists at the Oak Ridge National Laboratory. The project involves collecting fish from the Clinch River, Tenn., above Watts Bar Reservoir, where they are exposed to low level radioactive wastes from the Laboratory.

Radionuclides are accumulated by the fish either directly or through the food chain. Autoradiography of fish scales showed localized rings of radioactivity which presumably were associated with the fish's growth when they were in areas contaminated by radioactive wastes. The possibility appears that these rings may be used as a marking technique. The development of radionuclide tagging where fish would be marked without being handled, impaired, or injured could provide a means of study without altering fish behavior or growth.

Transportation

EASTERN RAILROADS SEEK INCREASED ICE AND SALT CHARGES:

The railroads in the Eastern territory have petitioned the Interstate Commerce Commission for permission to increase their charges for ice by 8½ percent and their charges for



salt by 6 percent. The charges apply to shipments of fish and certain other products. The increase would raise the present cost of ice from $6.91 per ton to $7.50 a ton and the cost of salt from $1.04 per cwt. to $1.10 per cwt.

The railroads asked that the charges be increased immediately subject to a later investigation. If the entire increase is not ultimately approved, the railroads would voluntarily refund the excess collected in the interim.

United States Fisheries

FISH STICKS AND PORTIONS PRODUCTION, OCTOBER-DECEMBER 1962:

United States production of fish sticks amounted to about 19.0 million pounds and that of fish portions was 22.4 million pounds during the fourth quarter of 1962, according to preliminary data. This was a gain of nearly 5.1 percent in fish sticks and 26.2 percent in portions as compared with the same quarter of 1961.

Cooked fish sticks (17.5 million pounds) made up 92.3 percent of the fish stick total. The remaining 7.7 percent consisted of raw fish sticks. A total of 21.6 million pounds of breaded fish portions (of which 17.4 million pounds were raw) and 826,000 pounds of unbreaded portions were processed during the fourth quarter of 1962.

Plants on the Atlantic Coast produced the bulk of the fish sticks and portions--27.8 million pounds. The Gulf and Inland States produced 11.1 million pounds, and the Pacific Coast States, 2.4 million pounds.

During 1962, fish stick production of 71.7 million pounds was up 2.7 percent, and the fish portions production of 77.7 million pounds was up 29.8 percent as compared with 1961.

Table 1 - U.S. Production of Fish Sticks by Months and Type, October-December 1962 1/

Month	Cooked	Raw	Total
	(1,000 Lbs.)		
October	6,118	557	6,675
November	5,788	487	6,275
December	5,601	408	6,009
Total 4th Quarter 1962 1/	17,507	1,452	18,959
Total 4th Quarter 1961	16,834	1,205	18,039
Total 1962 1/	66,556	5,177	71,733
Total 1961	65,006	4,818	69,824

1/Preliminary.

Table 2 - U. S. Production of Fish Sticks by Areas, October-December 1962 and 1961

Area	1/1962		2/1961	
	No. of Firms	1,000 Lbs.	No. of Firms	1,000 Lbs.
Atlantic Coast States	22	14,918	23	14,620
Inland & Gulf States	5	2,368	7	1,934
Pacific Coast States	10	1,673	9	1,485
Total	37	18,959	39	18,039

1/Preliminary. 2/Revised.

Table 3 - U.S. Production of Fish Sticks by Months, 1958-62

Month	1/1962	2/1961	1960	1959	1958
	(1,000 Lbs.)				
January	6,104	6,091	5,511	6,277	5,471
February	6,859	7,092	6,542	6,352	5,925
March	7,706	7,233	7,844	5,604	5,526
April	5,480	5,599	4,871	4,717	4,855
May	5,609	5,129	3,707	4,407	4,229
June	5,058	4,928	4,369	4,583	4,702
July	3,613	3,575	3,691	3,790	4,574
August	5,696	6,927	5,013	3,879	4,358
September	6,506	5,206	5,424	5,353	5,328
October	6,675	6,133	6,560	5,842	5,485
November	6,275	6,288	6,281	4,831	5,091
December	6,009	5,618	5,329	4,743	5,467
Total	71,590	69,819	65,142	60,378	61,011

1/Preliminary. 2/Revised.

Table 4 - U. S. Production of Fish Portions by Months and Type, October-December 1962 1/

Month	Breaded			Unbreaded	Total
	Unbreaded	Raw	Total		
	(1,000 Lbs.)				
October	1,805	7,165	8,970	355	9,325
November	1,067	5,933	7,000	281	7,281
December	1,259	4,338	5,597	190	5,787
Tot. 4th Qtr. 1962 1/	4,131	17,436	21,567	826	22,393
Tot. 4th Qtr. 1961	3,518	13,564	17,082	657	17,739
Total 1962 1/	13,874	61,431	75,305	2,406	77,711
Total 1961	11,003	46,783	57,786	2,061	59,847

1/Preliminary.

Table 5 - Production of Fish Portions by Areas, October-December 1962 and 1961

Area	1/1962		2/1961	
	No. of Firms	1,000 Lbs.	No. of Firms	1,000 Lbs.
Atlantic Coast States	23	12,930	24	9,870
Inland & Gulf States	11	8,775	12	7,562
Pacific Coast States	7	688	6	307
Total	41	22,393	42	17,739

1/Preliminary. 2/Revised.

Table 6 - U. S. Production of Fish Portions by Months, 1958-1962

Month	1/1962	2/1961	1960	1959	1958
	(1,000 Lbs.)				
January	5,102	4,303	3,632	2,692	1,973
February	6,374	4,902	3,502	3,025	1,254
March	6,931	5,831	4,706	3,225	1,471
April	6,350	4,484	3,492	2,634	2,268
May	5,749	3,879	3,253	2,684	1,478
June	6,082	4,039	3,995	3,247	1,504
July	4,706	3,962	4,088	2,227	2,161
August	6,662	4,963	3,558	2,796	1,516
September	7,159	5,745	4,631	3,558	1,566
October	9,325	6,759	5,275	4,314	2,560
November	7,281	5,789	4,790	3,483	1,979
December	5,787	5,191	4,459	3,262	2,060
Total	77,508	59,847	49,381	37,147	21,790

1/Preliminary. 2/Revised.

U. S. Fishing Industry

LOANS TO FISHERY FIRMS:

Sixty loans totaling $4.5 million have been made to fishery products processors by the Small Business Administration (SBA) of the U.S. Department of Commerce since enactment of the Small Business Act in 1953. In addition, SBA has made about 40 loans totaling $2.8 million to wholesale and retail fish distributors.

U. S. Fishing Vessels

DOCUMENTATIONS ISSUED AND CANCELLED, JANUARY 1963:

Table 1- U.S. Fishing Vessels 1/ --Documentations Issued and Cancelled, by Areas, January 1963 with Comparisons

Area (Home Port)	January 1963	January 1962	Total 1962
	...(Number)...		
Issued first documents 2/:			
New England	1	2	28
Middle Atlantic	1	-	3
Chesapeake	-	4	43
South Atlantic	2	2	47
Gulf	12	10	110
Pacific	4	6	130
Great Lakes	-	-	5
Puerto Rico	-	-	2
Total	20	24	368
Removed from documentation 3/:			
New England	1	2	24
Middle Atlantic	4	8	39
Chesapeake	1	2	23
South Atlantic	7	3	38
Gulf	5	13	104
Pacific	7	16	111
Great Lakes	2	5	22
Hawaii	-	1	3
Puerto Rico	-	-	1
Total	27	50	365

1/For explanation of footnotes, see table 2.

Table 2 - U. S. Fishing Vessels--Documents Issued and Cancelled, by Tonnage Groups, January 1963

Gross Tonnage	Issued 2/	Cancelled 3/
	...(Number)...	
5-9	5	7
10-19	6	7
20-29	-	2
30-39	1	3
40-49	1	1
50-59	5	1
60-69	1	2
70-79	1	1
80-89	-	1
120-129	-	1
240-249	-	1
Total	20	27

1/Includes both commercial and sport fishing craft. A vessel is defined as a craft of 5 net tons and over.
2/There were no redocumented vessels in January 1963 previously removed from records. Vessels issued first documents as fishing craft were built: 1 in 1963; 12 in 1962; 1 in 1961; 1 in 1958; and 5 prior to 1951.
3/Includes vessels reported lost, abandoned, forfeited, sold alien, etc.
Source: Monthly Supplement to Merchant Vessels of the United States, Bureau of Customs, U. S. Treasury Department.

During January 1963, a total of 20 vessels of 5 net tons and over were issued first documents as fishing craft, as compared with 24 in January 1962. There were 27 documents cancelled for fishing vessels in January 1963 as compared with 50 in January 1962.

U. S. Foreign Trade

TRENDS IN EXPORTS OF FISHERY PRODUCTS DURING 1961:

The total value of United States exports of fishery products in 1961 was 21.4 percent below the 1960 value--exports of edible fishery products were down 23.5 percent and exports of inedible fishery products were down 18.5 percent. The decline was mainly due to reduced exports of canned and frozen salmon, canned sardines, canned shrimp, unmanufactured shells, and fish oil. The decline was partly offset by greater exports of frozen shrimp and canned mackerel.

Table 1 - Value 1/ of United States Exports of Fishery Products, 1952-1961

Year	Edible Products	Inedible Products	Total
	..... (US$1,000)		
1961	19,594	15,116	34,710
1960	25,622	18,543	44,165
1959	26,747	17,495	44,242
1958	19,440	11,564	31,004
1957	20,549	15,403	35,952
1956	22,939	16,564	39,503
1955	24,923	15,054	39,977
1954	16,238	15,289	31,527
1953	17,084	10,794	27,878
1952	15,511	6,436	21,947

1/Value at point of exportation.

Table 2 - Value 1/ of United States Exports of Fishery Products by Selected Commodities, 1957-61

Commodity	1961	1960	1959	1958	1957
	..... (US$1,000)				
Fish oils	8,908	10,688	11,902	7,761	10,760
Seal furs	3,097	3,309	2,580	1,511	2,455
Shells unmanufactured	1,380	2,636	977	624	775
Oysters, shucked	448	497	575	567	589
Salmon:					
Fresh or frozen	647	1,677	659	476	446
Cured	593	435	372	357	226
Canned	5,580	9,830	10,639	6,669	4,740
Mackerel, canned	581	211	135	333	2,146
Sardines:					
Canned, not in oil	1,336	3,443	5,843	3,231	2,654
Shrimp:					
Fresh or frozen	3,694	2,303	1,682	1,463	1,471
Canned	2,487	3,383	2,898	2,548	2,410
Squid, canned	353	691	906	501	2/
Miscellaneous fish:					
Fresh or frozen	809	947	622	1,036	973
Canned	391	355	326	496	2,137

1/Value at point of exportation.
2/Squid was included with "other shellfish" prior to 1958.

During 1961, United States fishery products were exported to 105 countries. Canada, the United Kingdom, Japan, Norway, and the

Netherlands (leading buyers of fishery products from the United States) accounted for 65.0 percent of the value of fishery exports (table 3). There was a substantial decline in exports to most leading markets except Canada, France, and Norway.

Table 3 - Value[1/] of United States Exports of Fishery Products by Selected Countries of Destination, 1957-61

Country	1961	1960	1959	1958	1957
	(US$1,000)				
United Kingdom	4,554	8,460	8,928	5,785	3,708
Canada	10,265	10,309	8,644	9,200	7,253
Philippines	582	2,494	5,587	2,578	6,027
Netherlands	2,385	4,350	4,352	2,007	2,969
Sweden	1,665	2,613	3,176	681	1,844
West Germany	1,555	2,201	2,888	3,043	5,099
Norway	2,390	1,390	1,296	1,063	970
Japan	2,984	3,295	928	501	669
Mexico	459	616	663	393	175
Cuba	-	175	787	490	721
Venezuela	360	461	614	641	573
Belgium and Luxembourg	351	537	746	948	447
France	1,007	1,048	766	68	259
Switzerland	738	1,082	762	387	463
Italy	423	643	303	158	259
Greece	364	313	306	136	195
Other countries	4,628	4,178	3,496	2,925	4,321
Total	34,710	44,165	44,242	31,004	35,952

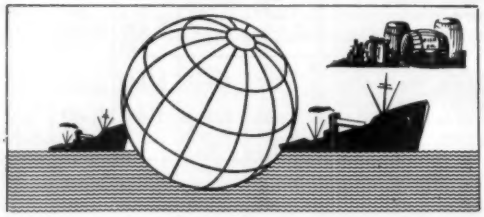
1/Value at point of exportation.

Canada was the leading foreign market for United States fishery products in 1960 and 1961.

Table 4 - Value of United States Exports of Fishery Products to Canada, 1961

Fish and marine animal oils	$ 1,333,000
Seal furs	1,777,000
Shrimp, fresh or frozen	1,676,000
Shrimp, canned	1,570,000
Salmon, canned	918,000
Fish, fresh or frozen	891,000
Oysters, shucked	428,000
Other	1,672,000
Total	$10,265,000

The United Kingdom ranked second as a buyer of United States fishery products, but the value of fishery exports to the United Kingdom in 1961 was down 46.1 percent from



that in 1960. The decline was mainly due to a drop in exports of frozen and canned salmon and canned shrimp. On the other hand, exports of fish oil to the United Kingdom became important for the first time in 1961.

Table 5 - Value of United States Exports of Fishery Products to the United Kingdom, 1961

Salmon, canned	$3,056,000
Shrimp, canned	557,000
Salmon, fresh or frozen	141,000
Fish and marine animal oils	568,000
Other	232,000
Total	$4,554,000

Exports to Norway, Sweden, West Germany, and the Netherlands consisted mainly of fish oils. The main products exported to Japan were frozen shrimp and unmanufactured shells. France bought frozen salmon, canned shellfish, seal furs, fish oils, and fish-liver oils.

Trend by Commodities: The principal fishery products exported by the United States in 1961 were fish oils, frozen shrimp, and canned salmon.

Fish Oil: In 1961, the value of exports of fish oil was noticeably less than in 1959 and 1960 in spite of the fact that the United States production during 1961 was the largest since 1939.

Canned salmon: In 1961, the value of exports of canned salmon was down 43.2 percent from 1960. The decline was partly due to a reduced domestic pack.

Shrimp: In 1961, the value of exports of frozen shrimp was 60.4 percent greater than in 1960, but the value of exports of canned shrimp was down 26.5 percent. Japan and Canada were the leading buyers of United States shrimp. (Does not include a substantial amount of re-exports, principally to Japan.)

Other Canned Fishery Products: In 1961, exports of canned sardines and canned squid declined to less than half their 1960 value. On the other hand, 1961 export shipments of canned mackerel and anchovies were about triple those of 1960.

Virginia

BIOLOGIST TO COLLECT FISH PARASITES FROM INDIAN OCEAN:

A biologist of the Virginia Institute of Marine Science, left March 1, 1963, for the Indian Ocean where he will collect fish parasites during the next three months. He will be a member of the first cruise of the International Indian Ocean Expedition. All expenses, including scientists' salaries, are being paid by the U. S. National Science Foundation.

The International Indian Ocean Expedition, sponsored by the United Nations Economic,

Scientific, and Cultural Organization (UNESCO), is a scientific endeavor primarily concerned with obtaining biological, chemical, geological, and physical information about land, ocean, and atmospheric conditions in the Indian Ocean area. At least 12 nations are participating in this important effort.

The biologist will participate in the first of 8 three-month cruises planned under the program. His work will be the collection of various fish species for a study of parasites. The project will aid in furthering worldwide studies of host-specificity of fish parasites.

The Virginia Institute Marine Laboratory has fish parasite collections from the western North Atlantic, Chesapeake Bay, Caribbean, Gulf of Mexico, Chile, New Zealand, Australia, and Antarctica. During recent years the Institute has been investigating a theory that fish parasites may act as natural tags and serve to indicate fish migrations.

* * * * *

STUDIES OF RADIOACTIVE WASTES IN BAY WATERS TO BE CONTINUED:

Studies on the role of filter feeding organisms in removing radioactive wastes from river and bay waters by scientists of the Virginia Institute of Marine Science are to be financed for the third consecutive year by a grant of $20,000 from the Atomic Energy Commission.

The Virginia marine scientists were among the first to consider the role of living organisms in removing suspended radioactive particles from the water. Scientists earlier held that suspended materials would likely soon be flushed from the system by strong seaward currents. According to the Institute's scientists, their studies show that radionuclides become strongly attached to suspended silt and clay particles. During normal feeding, oysters filter out tiny living plankton organisms along with other suspended and non-living particles.

After filtration this material is mixed with a mucous substance and deposited in compacted clumps on the bottom. The problem of what happens to radionuclides associated with clay and silt particles included in this mass thereafter assumes great importance.

The scientists reported that although some of the radioactive material is incorporated into the oyster's flesh and shell or redissolved in the water, most of it remains on the particles and is deposited in the bottom sediments. Much of this may subsequently be washed away by strong currents, but there is concern over amounts carried down into bottom layers by natural phenomena or by animals, such as worms, that live in bottom layers. When carried deep into the bottom by these organisms, the radioactive particles are no longer subject to transport by water movements.

In addition to oysters, the Virginia scientists will study removal of suspended particles by other filter feeders. Barnacles, clams, mussels, and tunicates (sea squirts) will be added to the 1963 phase of the project and silt particles will be "tagged" with a fluorescing dye to learn of their final disposition.

"Information provided by studies of this type are valuable in knowing what steps may have to be taken to preserve our valuable marine resources in the event of an accidental discharge of radioactive materials into the marine system," one of the Institute's scientists reported. "The increasing use of nuclear reactors by the military and in industry makes these investigations a growing phase of marine laboratory programs as we contine to adapt atomic energy for human progress."

Problems of possible radioactive contamination of various phases of the marine environment are but one facet of the ever increasing degradation to which natural waters are being subjected by the activities of man. Only by acquisition of adequately detailed scientific knowledge will it be possible to minimize destruction of this resource which is so important to society.

Wholesale Prices

EDIBLE FISH AND SHELLFISH, FEBRUARY 1963:

Wholesale prices for edible fish and shellfish (fresh, frozen, and canned) in February this year dropped 2.9 percent from January 1963 due primarily to lower ex-vessel prices for fresh drawn haddock and a drop in prices for fresh haddock fillets and frozen dressed halibut. Supplies of groundfish landed at New England ports began to improve in late winter, and stocks of frozen dressed halibut from the 1962 Pacific fishing season were higher than normal. Compared with the same month a year ago, wholesale prices for fishery products this February were lower by 1.1 percent due mainly to lower first hand prices for fresh haddock fillets and canned fish products.

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, February 1963 with Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ ($)		Indexes (1957-59=100)			
			Feb. 1963	Jan. 1963	Feb. 1963	Jan. 1963	Dec. 1962	Feb. 1962
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					118.4	121.9	120.9	119.7
Fresh & Frozen Fishery Products:					124.4	130.0	127.6	118.5
Drawn, Dressed, or Whole Finfish:					122.7	137.2	133.1	118.6
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.12	.21	94.6	162.9	143.8	107.4
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.43	.43	125.6	128.1	127.1	117.3
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.96	.96	133.8	134.5	135.2	120.5
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.68	.71	100.7	106.0	103.0	115.7
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.69	.54	113.0	88.5	88.5	120.4
Processed, Fresh (Fish & Shellfish):					128.5	130.4	128.5	125.4
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.41	.57	98.3	137.2	139.6	109.3
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	1.12	1.09	130.7	127.2	123.1	123.1
Oysters, shucked, standards	Norfolk	gal.	7.75	7.88	130.7	132.8	132.8	130.7
Processed, Frozen (Fish & Shellfish):					117.3	117.5	116.4	107.7
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.39	.40	98.9	100.1	100.1	100.1
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.37	.37	108.5	107.0	107.0	96.7
Ocean perch, lge., skins on 1-lb. pkg.	Boston	lb.	.33	.34	115.7	117.5	117.5	119.2
Shrimp, lge. (26-30 count), brown, 5-lb. pkg.	Chicago	lb.	1.04	1.05	123.4	123.9	122.2	112.1
Canned Fishery Products:					108.0	108.0	109.4	122.1
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	24.75	24.75	107.9	107.9	111.1	124.2
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	11.75	11.75	104.4	104.4	104.4	107.9
Mackerel, jack, Calif., No. 1 tall (15 oz.), 48 cans/cs.	Los Angeles	cs.	5.90	5.90	2/100.0	2/100.0	2/100.0	3/118.5
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	9.31	9.31	119.4	119.4	119.4	164.3

1/Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.

2/One commodity has been dropped in the fishery products index as of December 1962--"Sardines, Calif., tom. pack, No. 1 oval (15-oz.), 24 cans/cs."--and replaced in the fishery products index by--"Mackerel, jack, Calif., No. 1 tall (15-oz.), 48 cans/cs." Under revised procedures by the Bureau of Labor Statistics all new products enter wholesale price indexes at 100.

3/Based on Calif. sardines and not directly comparable with new subgroup item (jack mackerel) for January-February 1963 and December 1962.

The drawn, dressed, and whole finfish subgroup index in February 1963 was down 11.6 percent from a month earlier, but was up (3.5 percent) from February a year ago. Much lower ex-vessel prices at Boston for fresh drawn haddock were largely responsible for the decrease from January to February this year. In addition, some weakness developed in the wholesale market for frozen dressed halibut (down 2.0 percent). From February a year ago to February this year, a decrease of 12.0 percent in the drawn fresh haddock price was more than compensated for by increases in prices for frozen dressed halibut (up 7.1 percent) and frozen dressed salmon (up 11.0 percent). Changes in fresh-water fish (whitefish and yellow pike) wholesale price indexes for January and February 1963 as compared with February 1962 were not significant due to the lack of regular supplies.

The fresh processed fish and shellfish subgroup index this February decreased 1.5 percent from a month earlier, but was up 2.5 percent from February 1962. A decrease of 28.4 percent (dropped about 16 cents a pound) in the fresh haddock fillet price at Boston plus a slightly lower fresh shucked oyster price was offset partially by a 2.8 percent increase in the fresh shrimp price at New York City. As compared with February 1962, haddock fillets this month were down 10.1 percent, but fresh shrimp prices were higher by 6.2 percent. The fresh shucked oyster price was unchanged from February a year ago to this February.

The February 1963 processed frozen fish and shellfish subgroup price index dropped slightly (less than 1/2 percent) from the preceding month because of a one-cent-a-pound decrease in the price for frozen shrimp at Chicago, plus declines of about 1/2 cent a pound in the wholesale prices for frozen flounder and ocean perch fillets. During the same period frozen haddock fillet prices increased 1.4 percent (1/2 cent a pound). Compared with the same month a year ago, the February 1963 subgroup index rose 8.9 percent due to higher frozen shrimp prices at Chicago (up 10.0 percent), but with slightly lower prices for frozen ocean perch and flounder fillets.

The canned fishery products subgroup index was unchanged from January to February 1963 and remained at 108.0 percent of the 1957-59 base. From February a year ago to this February, the subgroup index dropped 11.5 percent because of a sharply lower canned Maine sardine price (down 27.3 percent), a lower canned pink salmon price (down 13.1 percent), and a 3.3 percent drop in the canned tuna price.

International

EUROPEAN FREE TRADE ASSOCIATION

ACCELERATED TARIFF CUTS PLANNED:

Ministers representing the European Free Trade Association (EFTA) countries (Austria, Britain, Denmark, Norway, Portugal, Sweden and Switzerland) met in Geneva, Switzerland, on February 18-19, 1963. They called for a detailed plan to abolish intra-EFTA tariffs and quotas on industrial products at an accelerated rate by 1966. Britain asked for 1965 as the target date.

Trade in agriculture and fish pose special problems, particularly to Norway and Denmark. (British Record, March 5, 1963.)

FISH MEAL

FISH MEAL PRODUCTION AND EXPORTS FOR SELECTED COUNTRIES, JANUARY-NOVEMBER 1962:

Member countries of the Fish Meal Exporters' Organization (FEO) account for about 90 percent of world exports of fish meal. The FEO countries are Angola, Iceland, Norway, Peru, and South Africa/South-West Africa.

Production and Exports of Fish Meal by Member Countries of the Fish Meal Exporters' Organization, Jan.-Nov. 1962

Country	Nov. 1962		Jan.-Nov. 1962	
	Production	Exports	Production	Exports
	(Metric Tons)			
Angola	4,375	3,434	29,041	28,663
Iceland	1,218	4,421	93,980	63,433
Norway	9,131	10,221	116,370	51,303
Peru	145,543	94,466	964,881	958,331
South Africa (incl. S. W. Africa)	800	9,680	201,219	181,641
Total	161,067	122,222	1,405,491	1,283,371

In January-November 1962, Peru accounted for 74.7 percent of total fish meal exports by FEO countries, followed by South Africa with 14.2 percent, Iceland with 4.9 percent, Norway with 4.0 percent, and Angola with 2.2 percent. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, February 6, 1963.)

FISH MEAL AND OIL

EUROPEAN MARKET TRENDS, FEBRUARY 1963:

The European fish oil market was quite firm with further price advances possible in early February this year according to Danish fish oil brokers. Current sales prices in U. S. currency were:

Danish herring oil for summer delivery--$123 per metric ton (5.58 cents per pound) c.i.f. German and Scandinavian ports.

U. S. menhaden oil for Feb./Apr. delivery--$116 per metric ton (5.26 cents per pound) c.i.f. Rotterdam.

Peruvian semi-refined anchovy oil for April-July delivery--$120 per metric ton (5.44 cents per pound) c.i.f. Rotterdam.

Some Icelandic herring oil was reported sold for summer delivery at $127 per metric ton (5.76 cents per pound) c.i.f. European ports, but it seems to be primarily an asking price. One holder of current stocks of Icelandic oil is waiting for a price of $141.50 (6.42 cents per pound).

Late in February 1962, Danish brokers stated that the European fish-oil market continued to be firm with few offerings. The same sources also stated that there were indications that some stocks were being held for higher prices. A late February sale of menhaden oil at US$128 a metric ton (5.81 cents a pound) c.i.f. Scandinavian ports, according to above sources, was below the market, which was nearer the $132-133 (6.00-6.03 cents a pound) level. The Danish sources feel that the 1963 level of fish-oil prices will be determined by sales of the 1962/63 Antarctic whale-oil production to a large United Kingdom buyer.

International (Contd.):

The European market for fish meal was weak late in February and, according to Danish brokers, was unaffected by labor troubles in Peru. Fish-meal brokers in Holland, West Germany, and the United Kingdom confirmed this view of the fish-meal market. A late February sale in the United Kingdom was made at $131.60 a long ton c.i.f. ($117.50 a short ton) and fish meal was offered for October 1963-June 1964 delivery at $130.90 a long ton c.i.f. ($116.88 a short ton). (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, February 6 and 25, 1963.)

FOOD AND AGRICULTURE ORGANIZATION

FISHERIES DIRECTOR TALKS ON WORLD FISHERIES DEVELOPMENTS:

The control of stocks of commercially valuable sea fish, the transplanting of fish from the northern to the southern hemisphere, and a forecast of at least doubling the present harvest from the sea in the coming 2 or 3 decades, were some of the prophecies made in a speech by the Director of the Fisheries Division of the Food and Agriculture Organization (FAO). His speech was given at the annual dinner of the Newfoundland Board of Trade at St. John's, Canada.

After tracing the changes in fisheries during the past 40 years, the Fisheries Division Director stated:

"One thing that is basic to such consideration is simply this: fishing is still a hunting operation. Beyond the territorial waters, whatever they may be, it is first come, first served, and devil take the hindmost. I am confident that some day this will change; there are already signs of it coming. For example, the "abstention principle" which is a feature of the North Pacific Fisheries Treaty. But it is my opinion that many years will pass before humankind will be able to achieve such an equity. In the meantime it will be up to nations, while doing their utmost to bring about a more reasonable regime, to adjust themselves to things as they are and to keep up with changes."

On the catching side, he said, there will be continued improvement in the efficiencies of boats and gear and fish finding operations. The use of very high frequencies in echo sounders and ASDIC are already making it possible to locate a single fish half a mile away. Moreover, it is possible to identify the kind of fish giving the echo.

"I think that the time may come when certain species of marine fish will be attracted by some means--for example by light, sound or fenced in by electric impulses or screens of air bubbles--and pumped from the sea," he continued. "Actually this is already being done experimentally by the Soviets. The Germans are doing considerable work with electric impulses. This works quite well in fresh water, but much more will have to be discovered before the technique can be made economical in sea water. New lightweight, non-deteriorating synthetic fibers will be used in knotless nets. The introduction of transducers into trawls themselves will make trawling a much less chancy operation. The continued study of fish behavior in the ocean will make them easier to catch. Much work in this field is being done by the U.S.S.R., Japan, Canada, and the U.S.A."

The design of new hull shapes will increase stability and safety, and propulsion efficiencies and new mechanized hauling will make it quicker and easier to haul the gear. The amount of capital employed in the floating equipment will tend to move upwards and fisheries are moving away from the "cottage industry" stage to the capitalized industry stage.

He went on to say: "There is another realm of progress which as yet is barely started, and that is fish culture. Coastal oyster culture is well known in many lands. Recently FAO through the Expanded Program of Technical Assistance, has started pearl shell culture in the Red Sea. There are many examples in the Far East and Australia of the culturing of the oyster which yields pearls. All these are true underwater farming operations. But I am not so much concerned with this as with the really exciting work which has been going on, for example, at Lowestoft, in England, on the plaice.

"The female plaice lays its eggs by the hundreds of thousands. But the natural mortality of the young larvae plaice is so great in the first few weeks that less than one thousandth of one percent survive. After this period the chances of survival are better. The English biologists thought that if they could protect the young larvae for from 6 to 8 weeks and get them over the initial critical period, it would greatly increase the yield.

"After many trials and many failures, it seems that they have succeeded. Survival can now be increased to well over 30 percent and possibly more. It does not take much imagination to see what this might lead to: a plaice hatchery on the inlet of the sea, an inlet which could be closed at will; the nurturing of the young fish initially in the hatchery and subsequently in the inlet itself, the waters of which might be fertilized; the subsequent transplantation of the young fish to the natural banks. Biologists are of the opinion that this might at least quadruple the yield of the fishery if proper agreements could be made among the different countries fishing."

Another example he cited is the recent success of a fishery scientist, under FAO Technical Assistance, in breeding the giant fresh water shrimp in Malaya.

Another development is the transplantation of fish. An example is the recent Soviet success in transplanting pink salmon from Siberia to the Baltic which may result in an entirely new fishery.

"Many of the fish that swim in the Northern Hemisphere are permanently barred from the Southern Hemisphere by the belt of high temperature equatorial waters," said the Director. "Some of these might be transplanted by man with the probable result of increased production. An example of this is the transfer of trouts and salmons from the Northern Hemisphere to New Zealand in the Southern Hemisphere. New Zealand has become famous for this and is a mecca for

International (Contd.):

sports fishermen. The ample presence of fish food has led to phenomenal growth in the trouts themselves. Thirty- or forty-pound trouts are not unusual.

"Another thing which I am fairly certain will take place is that man will eat many more kinds of fish than he does now," he continued. "In the Northern Hemisphere the kinds of fish consumed by man are relatively few There are many kinds which he does not eat. Often a change in the name of a fish will bring about a demand for it. Ocean perch is an example. In Denmark a demand is being created for filleted dogfish by calling it a different name. I think in the future man will eat them without knowing what he eats. This will come about by introducing changes in product form. For example, many countries have followed the Japanese lead in the manufacture of fish sausages. The Japanese have over a hundred ways of diversifying their products."

There will also be an increase in the use of aquatic plants, perhaps not so much in direct consumption as in food producing industries and in agriculture. There are millions of tons of aquatic plants available.

The Director continued with "The obvious support for believing in increased yields is that certain seas are abundant in fish that are not being caught. Take the Arabian Sea and Indian Ocean, for example. A few years ago a Soviet hydrographic vessel reported steaming for hour after hour in that area through dead floating fish of the mackerel type. It is estimated that there were hundreds of tons of fish. Apparently there are deep layers of water in these seas that contain little, if any, free oxygen. Sometimes these layers are brought to the surface by huge upwellings and fish die of suffocation. There is no doubt that the fish are there. But, as far as we can find out, there is no attempt to fish these waters. The result is a huge, untapped resource.

"All this adds up to the increased production of sea fish. . . . Within the next 20 or 30 years I think that harvests from the sea will be at least doubled."

In 1961 about one quarter of the world catch of more than 40 million tons of fish went into fish meal. Today the figure may be slightly more. Fish meal is used in feeding livestock and there is a growing demand for it. A new idea is to manufacture fish meal from fresh material under sanitary and hygienic conditions to prepare a wholesome protein concentrate for human consumption. Africa, India, and South Asian countries are examples where this material is used in fish soups and curries, etc., and supplements predominant carbohydrate diets.

"FAO, the Fish Meal Association, and the United Nations Children's Fund (UNICEF) are cooperating in this under the Freedom from Hunger Campaign," he stated. "It is my opinion that large new markets can be opened up for the new product with the consequent increase in consumption of animal protein of high quality."

* * * * *

FIRST MEETING OF ADVISORY COMMITTEE ON MARINE RESOURCES RESEARCH:

The recently established Advisory Committee on Marine Resources Research of the Food and Agriculture Organization (FAO) met for the first time in Rome on January 28, 1963. The week-long meeting opened with an address by the Deputy Director-General of FAO who pointed out that: "The growth and expansion of highly industrialized sea fisheries are having an increasing impact on the living natural resources on which they depend. At the same time they are leading to an intensified search for new resources. Both these factors reinforce the needs for scientific study of all such resources as a basis for their wise and efficient use." The phrase "wise and efficient use," he said, meant not only the conservation and improvement of present world fish stocks, but also the application of modern scientific knowledge about the biology of fish and their environment "in such a way as to improve catching techniques and fishing operations generally."

Following the Deputy Director-General's address, Dr. A. W. H. Needler, Director, Fisheries Research Board of Canada, was elected Chairman of the Advisory Committee. The two Vice Chairmen elected were Dr. Cyril Lucas, Director of the Marine Laboratory of the Department of Agriculture and Fisheries for Scotland, and Professor Michitaka Uda of the Tokyo University Department of Fisheries.

The Advisory Committee will review FAO's present work in marine resources research and will discuss the research program planned for 1964-1965. (Food and Agriculture Organization of the United Nations, Rome, January 29, 1963.)

Note: See Commercial Fisheries Review, April 1962 p. 65, February 1962 p. 54.

INTERNATIONAL NORTH PACIFIC FUR SEAL COMMISSION

PROTOCOL TO AMEND INTERIM CONVENTION DRAFTED AT CONFERENCE:

The representatives of the Governments of Canada, Japan, the Union of Soviet Socialist Republics, and the United States, the Parties to the Interim Convention on Conservation of North Pacific Fur Seals of 1957, met at the Ministry of Foreign Affairs in Tokyo, Japan, from February 18 to March 1, 1963, in accordance with the provisions of the Convention.

The purpose of the Conference was to consider the recommendations of the Commission made in accordance with the Convention and to determine what further agreements might be desirable in order to achieve the

International (Contd.):

maximum sustainable productivity of the North Pacific fur-seal herds.

The Conference adopted a report to the Governments of the Contracting Parties recommending that they amend the present Interim Convention by concluding a protocol conforming to a draft which has been agreed to at the Conference.

If all of the four Governments, after reviewing it, agree to the draft protocol, it will be opened for signature by the four Governments in Washington, D. C.

The text of the draft protocol follows:

The Governments of Canada, Japan, the Union of Soviet Socialist Republics, and the United States of America, Parties to the Interim Convention on Conservation of North Pacific Fur Seals, signed at Washington on February 9, 1957, hereinafter referred to as the Convention,

Having given due consideration to the recommendations adopted by the North Pacific Fur Seal Commission on November 30, 1962, and

Desiring to amend the Convention,

Have agreed as follows:

Article I

The Convention shall be amended by this Protocol as from the date of its entry into force.

Article II

1. After Article II, paragraph 2(f) of the Convention, the following shall be inserted:

"(g) effectiveness of each method of sealing from the viewpoint of management and rational utilization of fur seal resources for conservation purposes;

(h) quality of sealskins by sex, age, and time and method of sealing; and."

2. In Article II, paragraph 2 of the Convention, "and" at the end of sub-paragraph (f) shall be deleted and "(g)" shall be replaced by "(i)".

Article III

Article II, paragraph 3 of the Convention shall be replaced by the following:

"3. In furtherance of the research referred to in this Article, the Parties agree:

(a) to continue to mark adequate numbers of pups;

(b) to devote to pelagic research an effort similar in extent to that expended in recent years, provided that this shall not involve the taking of more than 2,500 seals in the Eastern and more than 2,200 seals in the Western Pacific Ocean, unless the Commission, pursuant to Article V, paragraph 3, shall decide otherwise; and

(c) to carry out the determinations made by the Commission pursuant to Article V, paragraph 3."

Article IV

In Article III of the Convention, "and the Schedule" shall be deleted.

Article V

Article V, paragraph 2(e) of the Convention shall be replaced by the following:

"(e) study whether or not pelagic sealing in conjunction with land sealing could be permitted in certain circumstances without adversely affecting achievement of the objectives of this Convention, and make recommendations thereon to the Parties at the end of the eleventh year after entry into force of this Convention and, if the Convention is continued under the provisions of Article XIII, paragraph 4, at a later year; this later year shall be fixed by the Parties at the meeting early in the twelfth year provided for in Article XI."

Article VI

Article V, paragraph 3 of the Convention shall be replaced by the following:

"In addition to the duties specified in paragraph 2 of this Article, the Commission shall, subject to Article II, paragraph 3, determine from time to time the numbers of seals to be marked on the rookery islands, and the total number of seals which shall be taken at sea for research purposes, the times at which such seals shall be taken and the areas in which they shall be taken, as well as the number to be taken by each Party."

Article VII

In Article VIII, paragraph 2 of the Convention, "the Schedule" shall be replaced by "Article II, paragraph 3."

Article VIII

Article IX, paragraph 3 of the Convention shall be replaced by the following:

"3. In order more equitably to divide the direct and indirect costs of pelagic research in the Western Pacific Ocean, it is agreed that Canada and Japan for three years starting from the seventh year after entry into force of this Convention will forego the delivery of the sealskins by the Union of Soviet Socialist Republics as set forth in paragraph 1 of this Article and the Union of Soviet Socialist Republics will deliver annually to Canada and to Japan 1,500 sealskins each during these three years."

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Article IX

1. In Article XI and Article XIII, paragraph 4 of the Convention, "sixth" shall be replaced by "twelfth".

2. In Article XIII, paragraph 4 of the Convention, "six" shall be replaced by "twelve".

Article X

The Schedule annexed to the Convention shall be deleted.

Article XI

1. This Protocol shall be ratified and the instruments of ratification deposited with the Government of the United States of America as soon as practicable.

2. The Government of the United States of America shall notify the other signatory Governments of ratifications deposited.

3. This Protocol shall enter into force on October 14, 1963, if the fourth instrument of ratification is deposited on or before that date, and if the fourth instrument of ratification is deposited after October 14, 1963, on the date of its deposit.

4. Notwithstanding Article I of this Protocol:

(a) if this Protocol has not entered into force on or before January 31, 1964, the Convention shall apply with respect to pelagic research for the seventh year.

(b) even if this Protocol has entered into force after the beginning of the commercial sealing season of the seventh year, Article IX, paragraph 3 as amended by this Protocol shall apply with respect to the said season.

5. The original of this Protocol shall be deposited with the Government of the United States of America, which shall communicate certified copies thereof to each of the Governments signatory to this Protocol.

Note: See Commercial Fisheries Review, January 1963 pp. 72 and 74, May 1962 p. 41, and April 1957 p. 33.

INTERNATIONAL NORTHWEST PACIFIC FISHERIES COMMISSION

JAPAN-SOVIET FISHERIES CONFERENCE DATE SET:

The International Northwest Pacific Fisheries Commission (Soviet Union and Japan) were scheduled to hold a series of meetings beginning March 4, 1963. The Commission sets the annual Soviet and Japanese catch quota for salmon and king crab in the Northwest Pacific Ocean. (United States Embassy, Tokyo, January 9, 1963.)

UNITED NATIONS CONFERENCE ON THE APPLICATION OF SCIENCE AND TECHNOLOGY FOR THE BENEFIT OF LESS DEVELOPED AREAS

FISHERY DEVELOPMENT PLANS PROPOSED BY U. S. SCIENTISTS:

Two long-range plans under which emerging nations can convert the unused protein in their coastal waters into food for their hungry were submitted by United States scientists to be incorporated into the proceedings of the February 1962 Conference on the Application of Science and Technology to Less-Developed Areas, held in Geneva, Switzerland.

One plan in the papers submitted for publication pointed the way for the development of fisheries along traditional lines to supply needed protein and to meet the individual tastes for fresh, dried, or canned fish. Another plan showed the possibilities of developing a highly acceptable fish protein concentrate to supply the animal protein needs of those whose diets are lacking in this nutrient. The separate plans would not be in conflict, but would supplement each other--taking into account problems of food distribution and traditional forms of food preparation.

The scientists based their programs upon the proposition that the sea, acre for acre, is potentially as productive as the land; that only about 16 percent of this potential is being harvested; that only about one-fifth of the world's harvest of fish is available to the people in the areas where the shortage of animal protein is most acute.

The plans were prefaced by a review of conditions in many parts of the world. Peru has increased its fish harvest 600-fold in the past 15 years. West Africa has areas in which peoples, a few miles from the coast, are suffering from lack of proper food while the coastal waters teem with protein-packed fish. India has a shortage of harbors which hampers fish landings. There are also social customs there which frown upon the use of fish as food. In many areas, hot weather and poor transportation facilities have erected an impassable barrier to utilization and distribution of fishery resources actually only a few miles away.

The first plan called for a balanced, concurrent development of production, processing and distribution, all of which must necessarily be in accord with the economic,

International (Contd.):

technological and social progress of the respective nations. The scientists emphasize any fishery development must be tied closely to the existing base--human skills and industrial facilities. They noted the undesirability of producing more fish than the industry can properly process and distribute; that it would be of no purpose to introduce fishing gear which exceeds the capacity of the available vessels or the present skills of the available workers, and that national customs must be taken into consideration.

According to the United States scientists, the development of these traditional fisheries could well cover a period of ten years or more. The program would include analysis of the economic, social, and religious barriers to fishery development. It would recognize the need for biological, technological, economic and engineering skills for the optimum development of the fishery resource, and it would also begin with the facilities and fishermen at hand and attempt to achieve better utilization of the present facilities by training the fishermen, by making improvements in the lines and nets being used, and by converting to more efficient equipment and methods when the demand increases, skills develop, and processing and marketing methods improve.

The second plan explained how time, temperature and transportation categories, which offer serious problems in the development of the traditional fisheries in certain parts of the world, can be obviated, to a great extent, by the development of a highly desirable fish protein concentrate.

More than 20 nations are interested in the search for a satisfactory fish protein concentrate. The Canadians have developed a product of exceptionally high nutritive quality and several United States industries have developed products which are now under test. The Union of South Africa has developed and tested a concentrate. The United Nations has actively cooperated with the Chilean Government in a pilot plant operation. Researchers in Uruguay, Morocco, India, Russia, Norway, Sweden, Denmark, and Britain, are actively seeking ways and means for preparing the most acceptable concentrate.

The United States Government contemplates an extensive review of the problems associated with the manufacture of, and use of the concentrate.

Fish protein concentrate will not eliminate the problems of time, temperature and tranportation but it will reduce them to a great extent. There will be problems on packaging, marketing, and consumer education, but those problems would be far less challenging than those encountered in expanding the utilization of existing types of traditional fishery products.

This is not to say, the scientists pointed out, that the development of a suitable fish protein would replace other methods of processing for the individual taste remains a potent factor in the market. But with both these plans in operation, such important objectives as expansion of the over-all market for fishery products expansion of the world's fishing effort, and the extension of the dietary benefits of marine resources to nutritionally deficient population groups can be achieved.

A third phase of fishery resource development discussed was the effect industrialization was having upon the fisheries of the older nations. It was pointed out that in America, development proceeded in steps associated with technological advances affecting vessels, fishing methods, techniques of preservation, and facilities for transporting, storing and marketing. Where American fisheries have been slow to develop, the principal retarding influence has been ignorance about the resource, about its possible use, or about techniques for developing it.

The stimulus of science and technology has had both good and bad effects upon the fisheries in the United States. Disposal of chemical wastes into fishery habitat and the blocking of migration streams by huge dams have had injurious effects. On the other hand, such developments as the aqualung has led to intensive biological studies of underwater habitat and to the development of new fisheries through the creation of artificial reefs.

The industries which have made the great modern fisheries are based upon such things as the manufacture of fish meal, oil and solubles, canning, and refrigeration. The increased demand for raw material for the fish-processing industries has stimulated improvements in vessels, vessel equipment, fishing gear and techniques, extension of the

International (Contd.):

range of fishing, and general improvements in operations.

Industrialization has also resulted in a tremendous increase in the number of persons fishing for recreation, or for food for their personal use.

Scientists who participated in the preparation of the presentations to the conference included representatives from the U. S. Department of the Interior's Bureau of Commercial Fisheries and Bureau of Sport Fisheries and Wildlife, University of Washington, Seattle, Wash., and research and scientific organizations.

Australia

ABALONE EXPORTS TO HONG KONG PLANNED:

A firm in Tasmania planned to ship about 2,000 pounds of frozen abalone to Hong Kong during early 1963 in an effort to develop a new export market. The abalone consignment to Hong Kong will be marketed as a low-priced product. The Tasmanian firm was also conducting experiments in drying abalone for export. The manager of the firm said that good quality abalone were plentiful in Tasmanian waters. The firm employed two skin divers equipped with aqualungs to harvest them.

Several years ago, an attempt to develop a market for abalone in Sydney, Australia, proved unprofitable. (Fish Trades Review, Australia, December 1962.)

* * * * *

ANOTHER TUNA FREEZING AND CANNING VENTURE PLANNED:

Following harbor improvements, the New South Wales port of Ulladulla (located about 100 miles south of Sydney) hopes to develop a Ł500,000 (US$1,122,000) tuna-fishing industry. The Ulladulla's fishermen's Cooperative believes that in addition to tuna canning that the whole frozen tuna can be sold profitably in the export market. As a step towards developing a tuna-processing industry, the Cooperative has set up a cannery in the nearby town of Milton. One of the Cooperative's officers is reported to have pioneered canning at Eden some years ago. (Fish Trades Review, December 1962.)

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RESEARCH ON TUNA AND AUSTRALIAN SALMON AIDED BY TAGGING:

Intensive fish-tagging programs on tuna and salmon are being carried out by Australia's Division of Fisheries and Oceanography. The Division's target is to tag 15,000 tuna and 50,000 salmon in 1963 and 1964. The tagging technique is used to gain information on rates of growth, distribution, and movement of the fish.

During the past five years, 7,000 tuna have been tagged of which 108 have been recovered.

In the past, most fish tagged have been caught from vessels owned by the Division or under charter. In 1963, the scientists will work with the fishing fleet and will tag fish caught during commercial fishing operations. Fishermen will be paid the ruling market price for fish which the scientists tag and release.

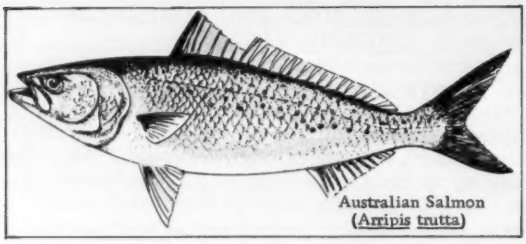
Most tuna fishermen are familiar with the red spaghetti or streamer-type tag used to tag tuna. Some tags now have a yellow tip, which indicates that fish have also been given an injection of harmless terramycin which makes the bones fluorescent. This technique was first tried in Australia in tuna-tagging operations carried out from the chartered vessel Estelle Star in Western Australia in 1962. A number of fish which were injected have been recaptured, and autopsies have shown that while the injection produces a marked local lesion in the muscle tissue at the injection site, this lesion had almost disappeared within four weeks. All calcified structures in the recaptured fish which have been examined show yellow fluorescence in ultra-violet light. The fluorescence is strongest in the outer layers of bone structures. Scales, though small and thin, produce a fluorescence visible to the naked eye.

This "marking" of calcium structures at the time of tagging will greatly assist scientists to measure the growth between tagging and recapture, and aid in determining the age of the fish.

In the last 15 years, the Fisheries Division has tagged 11,783 Australian salmon

Australia (Contd.):

(Arripis trutta) of which 1,212 have been recaptured. The internal-type tag is being used to tag the Australian salmon.



Australian Salmon
(Arripis trutta)

One of the present "mysteries" of Australian salmon is whether the fish move out to sea or stay near the coast the whole of the time. If they do move out to sea, the commercial fishermen may be fishing only the fringe of the population, and discovery of the seaward distribution could lead to a considerable expansion of the fishery. An intensive tagging program, particularly tagging of juvenile fish, may give the scientists some of the clues they need to answer the question whether there is a seaward distribution.

The Australian scientists hope to be able to arrange with commercial fishermen to purchase live salmon which they will tag and release. In addition, a scientific team will work in the estuaries of northern Tasmania to tag young fish. (Fisheries Newsletter, December 1963.)

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FISH FREEZING PLANT ON NORFOLK ISLAND PROPOSED:

A plant to freeze fish, and possibly vegetables, may be established on Norfolk Island off the East Coast of Australia by a firm that distributes dairy products in the Australian State of Queensland. The firm's plan was announced in December 1962 and includes the possibility of financial assistance to vessel owners in Norfolk Island in order to insure a steady supply of fish to the proposed freezing plant. The freezing plant would aid the depressed economy of Norfolk Island, which is an Australian territory. (Pacific Islands Monthly, January 1963.)

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RECOMMENDATIONS FOR MANAGEMENT OF SPINY LOBSTER FISHERY ADOPTED:

Management of the southern spiny lobster (crayfish) was discussed in Melbourne, November 27-28, 1962, by a special meeting of Australian Commonwealth and State fishery officers, as recommended by the Commonwealth State Fisheries Conference in September 1962 and approved at a meeting of Australian Ministers responsible for fisheries.

Represented at the Melbourne meeting were the following fisheries authorities: Commonwealth--Department of Primary Industry and Commonwealth Scientific and Industrial Research Organization (CSIRO); States--South Australia, Victoria, Tasmania, and New South Wales.

The conference adopted the following recommendations to the Governments concerned:

Legal minimum length of female crayfish to be reduced from $4\frac{1}{4}$ inches to $3\frac{3}{4}$ inches, the legal length of male crayfish to remain at $4\frac{1}{4}$ inches.

Following scientific evidence from CSIRO, the only closed seasons should be:

1. Male crayfish: Closed season from September 1-October 31 for Tasmania (except the King Island area), Victoria, South Australia, New South Wales, and extra-territorial waters. A closed season for male crayfish in the King Island area from December 15-January 31.

2. Female crayfish: Closed season from June 1-October 31 for Tasmania, Victoria, South Australia, New South Wales, and extra-territorial waters.

States and Commonwealth to adopt a carapace measurement from the mid-point of the anterior dorsal edge to the mid-point of the posterior dorsal edge along the median line of the carapace. If this recommendation is adopted, the recommended legal length will have to be adjusted. (Fisheries Newsletter, January 1963.)

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SHRIMP FISHERY IN SHARK BAY BEING DEVELOPED:

Another shrimp fishing project for Shark Bay, which is located about midway on Western Australia's coast, has

Australia (Contd.):

been announced by the managing director of a Fremantle company. The company plans to handle between 600,000 and 800,000 pounds of shrimp each season.

The company has been granted five licenses to fish for shrimp in the Shark Bay area. It will use five freezer vessels which it has available, but the shrimp will be processed in a new factory to be built at Shark Bay. An automatic machine will peel, devein, grade, and pack the shrimp ready for freezing. Refrigerated trucks will carry the processed shrimp some 600 miles to Fremantle for exporting.

In addition to the new shrimp processing plant at Shark Bay, the company plans to build a cafe, general store, and garage, and to supply Shark Bay township with electric power.

A second company has been granted 10 shrimp fishing licenses for Shark Bay. The company commenced fishing there in May 1962, using three vessels.

Ten shrimp fishing licenses have also been granted to individual vessel owners, making a total of 25 for Shark Bay.

In July last year, the Western Australian Minister for Fisheries announced restrictions on shrimp fishing in the Shark Bay-Carnarvon area. He said he had directed that no shrimp trawler from the eastern States should be issued a license unless it was purchased by, or brought under charter to, an approved local fisherman.

He also issued instructions that no local craft not already operating could enter the fishery in that area without prior approval from the Department. This was done, not only to safeguard the fishery against over-exploitation, but also to protect the fishermen themselves. (Australian Fisheries Newsletter, January 1963.)

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SHRIMP PROCESSORS SURVEY UNITED STATES MARKET:

A trial shipment of shrimp from Western Australia was consigned to the United States the latter part of 1962 by a firm at Carnarvon. The firm reported that it met with high success. Two directors of the firm made a survey of United States markets and processing methods in late 1962. They reported that there was a good market in the United States for Western Australian shrimp that were properly processed and graded. (Fish Trades Review, Australia, December 1962.)

Note: See Commercial Fisheries Review, December 1962 p. 61, October 1962 p. 46.

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SURVEY OF SHRIMP RESOURCES IN GULF OF CARPENTARIA PROPOSED:

Fishing interests at Queensland in 1962 began to explore the shrimp resources in the Gulf of Carpentaria. Intense exploitation by Queensland and New South Wales vessels of the shrimp grounds that stretch from the Newcastle area in New South Wales to the Rockhampton area in Queensland has created interest in new shrimp fishing areas.

A representative of a Queensland trawling company was reported by a Brisbane newspaper late in October 1962 as saying that the company planned to move in a trawler fleet and a mothership, after the wet season, capable of handling 100 tons of shrimp a week. It was also considering air-freighting shrimp.

The Queensland officer, in charge of State fisheries, was reported by another periodical as having said:

"We think there is a lot that can be done with the Gulf, but it will be a big operation.

"The first thing is to find out whether the shrimp and fish resources are big enough to carry an industry. Then, if a proper survey establishes that the potential is really big, a major fishing port will emerge on the Gulf coast. It could be at Weipa, which has a deep water port able to take export ships, or at Karumba, with planes freighting out the shrimp and fish.

"From 100 to 200 vessels could work in the Gulf, with women ashore preparing the catch for the markets of the world.

"The Government is taking the first step by preparing a detailed submission to the Commonwealth stating the case for full survey of resources."

At least £250,000 (US$561,000) would have to be spent on facilities before a stable fishing industry could be established in the Gulf of Carpentaria, another Brisbane newspaper reported.

The same newspaper reported that there were indications that the Gulf of Carpentaria "could be one of the best tuna grounds in Australia." A seafood processor from the Brisbane area reported after a trip to the Gulf that a six month survey of facilities would have to be made.

Experimental catches of shrimp made by the above seafood processor and his party, using the only trawler in the area, were encouraging. He stated it would be impossible to set up an industry at the Gulf immediately because of the primitive state of the area.

There are no fueling, wharf, or refrigeration facilities; roads are inadequate for the heavy trucks which would be needed; there is no general fresh water or electricity supply; and there is no labor pool, the seafood processor stated.

He added, at least half of the vessels working from Gold Coast ports would not be well enough equipped for the Gulf.

A meeting of the Queensland Licensed Boatowners, Skippers and Trawler's Association on October 26, 1962, reportedly decided to ask the State Government to survey the Gulf's shrimp potential, and ask all professional fishermen's organizations to join it in discussing the proposed survey with the Queensland Minister in charge of fisheries. (Australian Fisheries Newsletter, December 1962.)

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Australia (Contd.):

TASMANIAN SCALLOP LANDINGS IN 1962 SET NEW RECORD:

Scallop landings in Tasmania in 1962 reached a record 1,239,000 pounds (meat weight) as compared with 1,070,000 pounds in 1961 and the previous record in 1956, of 1,198,000 pounds. The Tasmanian Minister for Fisheries said that in 1962 there was a change in the localities where most of the scallops were taken. In the Channel area, production was 460,000 pounds compared with the one million pounds in 1961, but only part of the Channel was open for dredging during May 1962.

The poor Channel results forced fishermen to the east coast areas where some 780,000 pounds were landed, as compared with 22,000 pounds in 1961. Results from Ringarooma Bay were very disappointing.

The Minister said that research work by the Federal Fisheries Division and State fisheries officers was continuing in the Channel area. Late 1962 exploratory fishing indicated great numbers of small scallops in certain areas, and it might be necessary to close that area in 1963. A decision was due to be made after the program of test dredging was completed. (Australian Fisheries Newsletter, December 1962.)

Belgium

EFFECT OF EEC POLICIES ON IMPORTS OF FISHERY PRODUCTS:

Following is a report by the Canadian Embassy in Brussels on the possible effect of European Economic Community (EEC) policies on Belgian imports of fishery products:

Belgium's 9 million people consume about 270 million pounds of fishery products each year. Per capita fish consumption is about 30 pounds a year and over 70 percent of this is supplied by imports.

Table 1 - Belgian Trade in Fisheries Products, 1961

Item	Quantity	Value	
	Metric Tons	Million C$	Million US$
Fish production	46,300	11.0	10.2
Fish exports	13,500	5.6	5.2
Fish imports	89,500	37.5	34.8
Fish consumption	122,300	42.9	39.8

The Belgian fishing industry employs less than 2,500 full-time fishermen and shore workers. The main species caught by Belgian vessels are sole, cod, plaice, haddock, and shrimp.

Sorting of fish on board of vessel.

The leading fishery imports by volume are herring, mussels, mackerel, canned salmon, canned sardines, and oysters. On a value basis, canned salmon is Belgium's most important fisheries import.

Changes now taking place in the Belgian market for fishery products as a result of membership in the EEC will affect foreign suppliers.

In the past, Belgium has had relatively low import duties on most unprocessed fishery products and the rates on processed fishery products have at least been lower than those imposed by several other EEC countries. The new common external tariff towards which the EEC countries will move during the next few years represents an average of national rates. The result will be a substantial increase in Belgian import duties on fishery products from countries outside the EEC (see table 2).

Table 2 - Belgian Import Duties on Fishery Products

Product	Rate in Effect in 1962	Proposed Rate for 1970 1/
	(% Ad valorem)	
Salmon:		
Frozen	4.9	10
Canned	6.0	16
Lobster:		
Live	18.0	25
Canned	6.0	20

1/Common external tariff that EEC countries plan to establish by 1970.

The common external tariff planned for 1970 will inevitably help the position of suppliers within the EEC. It will bear most heavily on suppliers outside the EEC whose products incur high transportation costs. European countries not members of the EEC will improve their market possibilities to

Belgium (Contd.):

the EEC at the expense of such countries as Japan, Canada, and the United States.

Although consumption of fresh and frozen fish will probably increase in Belgium, producers within the EEC will have first chance to service any new demand. National fishing industries in the EEC are being modernized and coordinated to permit them to serve the growing European market on the best possible terms. (Foreign Trade, January 12, 1963.)

Note: See Commercial Fisheries Review, November 1962 p. 60.

Brazil

FISHERIES TRENDS IN RECIFE AREA, JULY-DECEMBER 1962:

The spiny lobster season (to the extent that a "season" exists in northeast Brazil) began in September 1962. By the first of October, 490,607 pounds of spiny lobster tails had been shipped to New York City through the port of Recife at the official price of US$0.80 a pound, a welcome source of foreign exchange.

During late November and early December last year, customs officers in Recife temporarily impounded several Japanese fishing vessels for investigation, charging them with violations of their agreement with the Brazilian Government. Also, during mid-December last year, port authorities refused to sell fuel to two Japanese vessels, supposedly on the grounds that they had been illegally selling their catches outside Brazil, a violation of the agreement.

In late July last year, two more French fishing vessels fishing for spiny lobster off the Northeastern coast were arrested and brought into port. As in previous cases, they were well outside the three-mile limit, but on the continental shelf. Brazilian authorities again emphasized that for purposes of protection of fisheries and mineral deposits they do not recognize the three-mile limit. Instead they claim jurisdiction out as far as the edge of the continental shelf--in that area about 40 miles offshore. (United States Consul, Recife, January 24, 1963).

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FISHERIES TRENDS IN SOUTHERN BRAZIL, JANUARY 1963:

The government of Santa Catarina State in southern Brazil granted 16 million cruzeiros (US$33,684) towards the construction of two fishery cold-storage plants in the municipalities of Biguacu and Garopaba. The money will be spent to purchase sites, build warehouses, install refrigeration systems and a water supply, and buy motors.

Fishery experts of the Food and Agriculture Organization (FAO) are going to survey fishing possibilities in coastal waters of Santa Catarina State. The results of their investigation will be submitted to FAO. (United States Consulate, Curitiba, February 19, 1963.)

Note: Brazilian cruzeiros 475 equalled US$1.00 at the free exchange rate during January 1963.

British Guiana

SHRIMP FISHERY TRENDS, 1962:

Shrimp landings in British Guiana in 1962 probably exceeded 4 million pounds, according to a representative of 1 of 2 United States shrimp firms in the country. In 1962, the active shrimp fleet in British Guiana increased to 55-60 vessels. But there was a decline in the average catch per vessel. It is believed that 90 percent of the shrimp catch was exported to the United States.

Shrimp is British Guiana's only significant fishery export. There is a small-scale fishery for other species for the local market. In 1961, British Guiana imported about 2,257 short tons of fishery products, most of which came from Canada. (United States Consulate, Georgetown, February 17, 1963.)

Canada

FISHERIES COUNCIL PROPOSES 12-MILE FISHING LIMIT:

Spokesmen for the Fisheries Council of Canada (industry organization) met with a committee of the Federal cabinet in Ottawa on January 28, 1963, and urged the Government to take action on declaring national waters, establishing base lines, and adopting a 12-mile fishing limit.

The Council's spokesmen recommended that such major areas as the Gulf of St. Lawrence, the Strait of Belle Isle, Hecate Strait, and Queen Charlotte Sound be declared as Canadian national waters in the same way as Hudson Bay and the Bay of Fundy are now recognized.

Canada (Contd.):

The Council brief suggested that declaration of the new zones take into special consideration the historic rights of France and the United States in Canadian national waters. As a first step, negotiations should begin with those two nations to reach a mutual understanding about their rights in an enlarged Canadian zone.

The brief proposed unilateral adoption of a plan which Canada and the United States jointly sponsored at the Second United Nations Conference on the Law of the Sea (held in 1960). This plan called for a 6-mile territorial sea and an additional 6-mile exclusive fishing zone. It was supported by 54 nations but fell one vote short of approval.

"The rapid increase in world fishing effort and efficiency has focused attention on the fact that, unless adequate safeguards are taken, the marine resources that have played such a vital role in the development of the Canadian economy will be harvested by foreign fishing fleets," the brief said.

Calling for adoption of the 12-mile limit, the brief declared that "unilateral declaration of the Government's policy must be followed immediately by active enforcement . . . and the policing of foreign fishing fleets."

"In the Council's opinion, enforcement is absolutely essential if Canada is to maintain her position in world fisheries."

In keeping with terms of the 1960 proposal, any nation whose vessels had made a practice of fishing in the outer 6 miles of the proposed 12-mile zone for at least 5 years would have the right to continue fishing that area for another 10 years.

But, apart from those special circumstances, foreign fleets would be barred from the exclusive zone. This would permit for the first time an effective program of fisheries management and conservation to preserve the Canadian fishing industry.

Maps of Canada's east and west coasts were attached to the brief showing the Council's proposals for drawing boundary lines of the protected zone. The base line would cut across all major bays and straits, turning them into national waters. (Fisheries Council of Canada, Bulletin, February 1963.)

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LIVE LOBSTERS SHIPPED BY AIR TO EUROPE:

Lobstermen of Canada's Maritime Provinces are finding new markets for their catch in Europe. Live lobsters from New Brunswick are crossing the Atlantic by jet at the rate of about 100,000 pounds a month and are turning up in such places as London, Paris, and Rotterdam. A St. Andrews, N.B., firm is the pioneer in this field and expects to ship about 500,000 pounds to Europe before the end of March. Working with the New Brunswick firm is a Canadian airline whose salesmen were responsible for finding the markets.

"It was no problem to sell Maritime lobsters," a spokesman of the airline stated, "their quality is well known in Europe. The problem was to convince buyers that it was possible to get them there alive."

About 50,000 pounds crossed the Atlantic in 1962 in the first season the airlift was used, and the total is expected to be 10 times greater this year.

The secret of getting live lobsters to the European market is careful packaging and speedy delivery. The lobsters are put in waterproof, cardboard cartons filled with wood chips or seaweed and dampened with sea water. They are kept at temperatures of 38°-45° F. during transit.

From St. Andrew's to their destination in Europe takes less than 24 hours. The lobsters are trucked to St. John, N. B., where they are placed aboard a shuttle airliner for the flight to Montreal, and transferred to a big jet for the Trans-Atlantic flight. The mortality rate is said to be as low as one-half of 1 percent.

The airline set up a weekly shipping program to Europe that was booked until March 31, 1963. After that it hoped to start shipments from Newfoundland. One Newfoundland fish exporter has expressed interest in the idea so far and other firms also may take part.

The airline official says that the outlook for the future is excellent. Europeans are enjoying unprecedented prosperity and appear well able to afford the tasty shellfish. He also stated that any Maritime lobster dealer interested in the European market need only contact the airline. The airline will send its own salesmen to Europe to find buyers, and then provide the aircraft to get the lobsters safely to their destination. (Canadian Fisherman, February 1963.) 3.)

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BRITISH COLUMBIA'S NEW LICENSING SYSTEM FOR COMMERCIAL FISHING:

British Columbia's commercial fishermen will have only one fishing license number a year under the new policy of the Canadian Department of Fisheries which became effective January 1, 1963. Previously, each license obtained by a fisherman had a different number. Licensing regulations remain the same, requiring fishermen to obtain a separate license for each type of fishing gear or fishery. But under the new system, each license will have the same number as the first one issued. The number must be displayed on every fishing boat.

When applying for each commercial fishing license, a fisherman will, as always, have to provide evidence of Canadian citizenship or of active service in Canada's Armed Services.

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NEW DEPUTY MINISTER OF FISHERIES APPOINTED:

The Canadian Prime Minister, on February 26, announced the appointment of Dr. A. W. H. Needler, O.B.E., Ph.D., F.R.S.C., of Nanaimo, B.C., as Deputy Minister of Fisheries to succeed the late G. R. Clark. One of the world's most respected fishery scientists, Dr. Needler for more than 35 years has studied the fishery resources of both the Atlantic and Pacific Oceans upon which the major part of Canada's fishing industry depends.

Canada (Contd.):

Director of the Fisheries Research Board of Canada's Biological Station at Nanaimo, B.C., since 1954, Dr. Needler was also Director of the Board's Biological Station at St. Andrews, N.B., from 1941 until his transfer to the west coast. For a period (1948-1950) he acted in the dual capacity of Assistant Deputy Minister of the Department and Director of the Board's St. Andrews Station.

In January of this year, Dr. Needler was appointed chairman of the recently-established Food and Agriculture Organization (FAO) Advisory Committee on Marine Resources Research, which held its first meeting at FAO's headquarters in Rome from January 28-February 2.

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NEW GOVERNMENT PATROL VESSEL FOR GREAT SLAVE LAKE:

Modern design techniques and building materials will be used in the construction of a new Canadian Department of Fisheries vessel for Great Slave Lake in the Northwest Territories. The 38-foot vessel will have a moulded fiber glass hull and be propelled by a single Diesel engine. It will have such navigational aids as an echo sounder, a directional finder, and a radio-telephone system. The vessel will be operated by a crew of two fisheries officers. Although primarily intended for patrol duties, it will also take part in search and rescue operations when called upon.

Canadian officials feel that the vessel's fiber glass hull is ideally suited for Great Slave Lake. Gill-net vessels of similar construction have been used with a great deal of success by British Columbia fishermen.

A contract for the construction of the vessel at a cost of C$39,427 (US$36,547) was awarded to a boat yard in Steveston, B.C., on February 18, 1963. When ready for operation late in the summer of 1963, the new vessel will replace the Mareca. Another vessel, the Marila, is also employed on Great Slave Lake. The lake supports an important commercial fishery for lake trout and whitefish, and in recent years has attracted many tourists and sports fishermen. Department of Fisheries vessels on Great Slave Lake are in service from the ice break-up in the spring until freeze-up, which is usually from June to September. (Canadian Department of Fisheries, Ottawa, February 18, 1963.)

Ceylon

FOREIGN EXPERTS REPORT ON FISHERIES DEVELOPMENT:

As a result of an appeal made last year by the Government of Ceylon for more foreign aid for fisheries development, two experts sent under the West German aid program have completed a feasibility survey of the fisheries industry. In their press interview on their departure they were reported to have said that Ceylon could become self-sufficient in fish within a few years if their four recommendations were carried out. These entail the development of Galle Harbor as a long-line tuna fishing center, development of the trawler fishing potentials of the San Pedro and Wadge Banks from centers at Trincomalee and Colombo, exploitation of fresh-water and brackish water fisheries, and setting up small canning plants.

Editorials in Ceylon newspapers on the subject of reports by experts over a period of almost 20 years have been critical. These newspapers state that, Ceylon, although surrounded by water, still must import most of one of its basic items of diet (fish). (United States Embassy, Colombo, February 12, 1963.)

Chile

FISHERIES TRENDS, JANUARY 1963:

Representatives of the Corporacion de Fomento de la Produccion de Chile (CORFO) were scheduled to arrive in Arica (located near Peruvian border) in late January 1963 in order to negotiate with the Junta de Adelanto de Arica (JAA) a joint development plan for the next five years. Under the terms of the draft plan, CORFO would match JAA contributions of approximately 500,000 escudos (about US$475,000 at official rate of exchange) for industrial development projects. CORFO would also supply technical assistance for such projects, which would probably involve mainly fish processing and fish meal plants.

Chile (Contd.):

On December 31, 1962, a Japanese fishing net company was authorized to bring into Chile the sum of US$225,000 to establish a subsidiary firm for the manufacture of nets, floats, and other fishing gear. The firm will be located in Iquique, Tarapaca.

The pilot of a light plane operating out of Iquique in late December last year reported sighting approximately 20 fishing vessels within "Chilean territorial waters." He identified the vessels as flying the flag of "a North American country which was not Canada or Mexico."

The reported sighting drew an editorial blast from an Iquique newspaper which characterized the "invasion" as a violation of international treaties.

United Nations technicians were scheduled to visit Tarapaca Province late in January, in connection with a study now being prepared on the development of the fishing industry in Chile.

Figures released in January 1963 indicate a considerable increase in landings at the port of Tocopilla for 1962 as compared to 1961. The reported landings for 1962 were 300,286 kilos (662,000 pounds) as compared to 241,058 kilos (531,000 pounds) in 1961. The increase is reportedly due to the increased use of purse seines by Tocopilla fishermen. (United States Consul, Antofagasta, February 1, 1963.)

Colombia

FOREIGN VESSELS FISHING OFF COASTS CAUSE CONCERN:

The controversy over the incursions of foreign (mostly United States) tuna vessels in Colombian waters was the subject of considerable comment in newspapers early in February 1962. Editorials, eye-witness accounts, and editorializing news stories resulted in the Foreign Ministry issuing a statement to clarify misstatements and erroneous conclusions in the newspapers as regards Colombia's international obligations in the field of territorial waters.

An editorial in one of the large Bogota newspapers on February 6, stated that Colombian fishing interests were going to petition the government on the need to preserve the fishing resources of the country from foreign incursions. It stated that "It is inconceivable--as paradoxically happens--that the extensive Colombian waters might be constantly visited by fishing boats of all nationalities in search of the undue appropriation of our riches."

The next day the same newspaper published the first of a two-part "eye-witness" account of the activities of United States tuna vessels off the Pacific coast, written by a retired Colombian Navy captain. It described in particular the activities of a United States vessel which was fishing off Buenaventura and stated that about 40 foreign flag vessels had been fishing in those waters during January. uary). It called for the application of national sovereignty through improved policing measures by the Colombian Navy.

Another news story on February 8, commenting on the Navy captain's comments, quoted a manager of an Atlantic coast fishing cooperative as calling for greater naval vigilance. This source also said that even this would not be sufficient as it was necessary to pass fishing legislation declaring Colombia's autonomy to the 12-mile limit as in the rest of Latin American countries. He declared further that the Geneva Convention had agreed on a 7-mile limit, but only Colombia of the Latin American countries had accepted this solution.

In a letter dated February 11 the Foreign Ministry Secretary-General rebutted this testimony. He said that in the First United Nations Conference on Rights of Sea at Geneva in 1958, four conventions were signed: (1) On the Territorial Sea and Contiguous Zone; (2) On the High Seas; (3) On Fishing and Conservation of the Live Resources of the Sea; and (4) On the Continental Shelf. He wrote that in none of these, nor in any other international agreement or national legislation, was there established a 7-mile limit. In Article 24 of the Convention on the Territorial Sea and Contiguous Zone, he said, there was a disposition which stated that the breadth of the territorial sea and adjacent area together could not exceed 20 kilometers or 12 miles. However, he pointed out that neither this convention nor the one relating to the high sea had ever been presented by the Government to the Congress and consequently the cited norm has never been accepted in Colombia.

The Foreign Ministry's Secretary-General went on to state that the Conventions on Fishing and Live Resources of the Sea and on the Continental Shelf were approved by the Congress in 1961 (Laws 9 and 119) but neither of them contained anything concerning jurisdictional limits. He said that in the Geneva Conference there was never any real agreement on the extent of the territorial sea. He promised that the Foreign Ministry would soon publish the report of the Colombian delegation at the Conference which reviewed the incompatible positions of the various states at the Conference which was the reason that a two-thirds majority on norms for the territorial sea was never attained and therefore never adopted. On the other hand, he added, Colombian legislation in effect (Law 14 of 1923 and Law 57 of 1931 in the Customs Code) relates directly to the exploitation of underwater hydrocarbon deposits and the vigilance of fishing within a jurisdiction of 12 miles or 20 kilometers. (United States Embassy, Bogota, February 15, 1963.)

Cuba

JAPAN DELIVERS FISHING VESSELS:

Three of five modern fishing vessels built in Japan for the Cuban Government arrived in Havana early in 1963, according to reports. The vessels were scheduled to begin fishing off the Brazilian coast with Japanese and Cuban crews. Delivery of the other two vessels was expected in Havana in March 1963.

Cuba (Contd.):

A Japanese source said that each vessel displaces about 400 tons and carries a crew of 16.

Note: See Commercial Fisheries Review, August 1962 p. 73.

Denmark

FISH FILLETS AND BLOCKS AND FISHERY INDUSTRIAL PRODUCTS EXPORTS, 1962:

Denmark's exports of fresh and frozen fillets and blocks in the year 1962 were 19.7 percent greater than in 1961, mainly because of an increase of 97.1 percent in exports of herring fillets. Exports of flounder and sole fillets increased 8.6 percent, but exports of cod and related species declined 4.6 percent. During 1962 exports to the United States of fresh and frozen fillets and blocks of about 11.1 million pounds (mostly cod and related species) were up from the exports of about 10.5 million pounds in 1961.

Denmark's exports of fresh and frozen fish fillets and blocks during December 1962 were 20.1 percent above exports in the same month in 1961. Of the total exports, about 285,000 pounds (mostly cod and related species) were shipped to the United States in December 1962 as against 354,000 pounds in the same month in 1961. The leading buyer of frozen fillets in December 1962 was West Germany with 48.2 percent of the total, followed by the United Kingdom with 15.3 percent.

Denmark's Exports of Fresh and Frozen Fish Fillets and Blocks and Fishery Industrial Products, 1962 1/

Product	December		Jan.-Dec.	
	1962	1961	1962	1961
	(1,000 Lbs.)			
Fillets and Blocks:				
Cod and related species	1,362	1,491	28,658	30,027
Flounder and sole	1,679	1,493	28,255	26,008
Herring	3,213	2,246	27,511	13,959
Other	85	49	678	1,130
Total	6,339	5,279	85,102	71,124
	(Short Tons)			
Industrial Products:				
Fish meal, fish solubles, and similar products	4,123	1,940	69,623	49,733

1/Shipments from the Faroe Islands and Greenland direct to foreign countries not included.

Denmark's exports of fish meal, fish solubles, and similar products in 1962 were 40.0 percent greater than in 1961. Exports to the United States were 110 tons in 1962 as against 28 tons in 1961.

During December 1962, Denmark's exports of fish meal, fish solubles, and similar products were 112.5 percent above the amount shipped out in the same month of 1961. The principal buyers were West Germany and the United Kingdom.

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FISHERY LANDINGS AND EXPORTS INCREASE IN 1962:

In 1962, Denmark's record fishery landings of 775,000 metric tons with an ex-vessel value of 460 million kroner (US$66.6 million) were up 23 percent in quantity and 11 percent in value from the previous year in spite of a two percent decline in the number of Danish fishermen. The increase was due mainly to heavier landings of industrial fish as a result of the improved world fish meal market. A study of fishing profits in 23 Danish ports showed a 5.3 percent return in 1961 on investment in fishing vessels.

Denmark's total exports of fishery products in 1962 reached a record level of 320,000 tons valued at 585 million kroner ($84.8 million), up 18 percent in quantity and 21 percent in value from the previous year.

In 1962, Danish exports of fishery products to the United States were 4 percent greater than in 1961. There was an increase in shipments to the United States of frozen lobsters (up 42 percent), as well as frozen cod fillets, canned herring, and canned brisling (all up about 10 percent). But shipments of frozen pond trout to the United States dropped 20 percent in 1962 mainly because of better markets in Europe.

In Greenland in 1962 the cod catch was 23,000 tons (up 2 percent from 1961); shrimp landings were 3,300 tons (up 32 percent); and the salmon catch was 250 tons (up 150 percent).

Faroese trawlers landed a record 35,000 tons of salted fish in 1962. Exports of iced, salted, dried, and frozen fish from the Faroe Islands in 1962 were valued at 113 million kroner ($16.4 million), up 21 percent from 1961. (United States Embassy, Copenhagen, January 30, 1963.)

Note: 6.902 Danish kroner equal US$1.00.

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FISHERIES FOR 1962 REVIEWED BY INDUSTRY LEADER:

Accomplishments of the Danish fishing industry in 1962 and prospects for the future were reviewed at the annual meeting of Denmark's Fisheries Council in mid-January this year. The Council is made up of the eleven major fisheries associations who have joined together to promote and protect the interests of the fishing industry.

The new chairman of the Council (Director of a cooperative which produces and exports a large volume of fishery products to the Continent and the United States), review-

Denmark (Contd.):

ed Denmark's 1962 record production (about 1,708 million pounds valued at about US$84.8 million) of fish and found that conditions were not as favorable as the statistics suggested. There had been labor shortages both on shore and at sea. Stormy weather had caused heavy losses, and average prices for the more important species, such as plaice, had declined slightly and were not counterbalanced by the increased prices for salmon, eels, lobster, etc. Fortunately, fish meal prices recovered and stimulated fishing for industrial species which lessened competition in the food fish fishery. However, he warned that a balance must be maintained between those fisheries if the Danish fishing industry is to continue to expand.

He was surprised that the fishermen's organizations could not reach agreement on a minimum price regulation for plaice which seems so advantageous to them. He believed it would be welcomed in the export industry if held to the original proposal of about 7 U. S. cents a pound. He believed further, that many of the difficulties hindering effective cooperation in the industry arose from the number of associations involved. The current 12 associations could be curtailed to 2--one to represent fishermen, and one to represent processors and marketing interests.

His criticism of the Government-sponsored Fisheries Commission (established in June 1961 to chart a future course for the Danish fishing industry) was directed mainly at the delayed results of its work. He believed its conclusions might not be wholly satisfactory because the more than 30 industry members could not spend the time required by the numerous committee meetings. Concentration on only a few of the questions might have been more profitable.

The Council's chairman suggested the Commission consider the establishment of a research institute devoted to the study of techniques of preparing, processing, packaging, transporting, and marketing Danish fishery products, possibly through expanding the present technological research laboratory in Copenhagen.

Speaking immediately prior to the breakdown of the European Economic Community and United Kingdom negotiations, he mentioned the general agreement within the fishing industry that Denmark should join the Common Market as soon as possible after the United Kingdom was accepted. Some concern was expressed, however, over maintaining necessary markets in the East Bloc countries especially East Germany, for herring and cod fillets valued at about US$3 million annually in the latter country alone. Demands of the Common Market would require mergers into larger exporting units and a significant increase in the size of the producing segment of the Danish industry.

Effective market promotion by a joint effort of the Government and the industry was viewed as of the greatest importance in the selling of Danish fishery products, although a satisfactory method for industry contributions had not been found. Although the fishing industry had representation on numerous bodies, he regretted that, despite its standing as the third largest exporting industry, it had not yet been possible to place a representative on the Economic Council.

The Danish Fisheries Minister explained to the meeting the proposed changes in the law governing the Fisheries Bank. These include an increase in capital, loans to the Greenland fishing industry, and an expanded advisory group. He regretted the loss of 43 fishermen, mostly in vessel sinkings in 1962, and hoped that the discussions under way with respect to a Nordic rescue service in the North Sea would minimize future losses. He favored the establishment of a fisheries institute for research in production, marketing, packaging, etc. Criticism of the lack of recommendations from the Fisheries Commission was not justified. Some of the work of the eight subcommittees was hampered because of the uncertainty surrounding the establishment of a joint European fisheries policy. (Regional Fisheries Attache for Europe, U. S. Embassy, Copenhagen, February 6, 1963.)

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FISHERY PRODUCTS MARKETING IN SOME EUROPEAN COUNTRIES REVIEWED:

The Danish Fisheries Attache with headquarters in Bern, Switzerland, and responsibilities for that country as well as France, Belgium, Luxembourg, Italy, Czechoslovakia, and Austria reported that Denmark's exports of fishery products to those countries had increased in value from US$11 million to over $17 million in the last four years. He stressed the need for market promotion, for quality,

Denmark (Contd.):

and for product identification with Denmark in order to take the fullest advantage of Denmark's reputation as a quality producer. He reported some confusion by housewives over the illustrations on packaged raw-breaded fishery products. And he suggested again that the industry look into the culture of mussels for export to France rather than sending them to Holland where they are cultured and reexported to France.

He reported that the important question in France is whether it will attempt to produce frozen fillets and itself stimulate their sales in competition with countries already established as frozen fillet producers. Alternatively, France might well concentrate on fresh fillets and leave the frozen fillet market to present producers and to an increased production in its North American island possession, St. Pierre.

His report stated that Danish exports to Italy increased 35 percent in four years. But there are credit problems which indicate the need for a credit information system.

In Belgium, he reports, there are numerous self-service stores and supermarkets but considerable market promotion will be required to reach the large potential market because frozen fish is not yet widely used.

In Austria, according to Denmark's Fisheries Attache, the demand for first-class fish is limited but may increase with greater purchasing power. (Regional Fisheries Attache for Europe, U. S. Embassy, Copenhagen, February 6, 1963.)

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AUCTION OF GREENLAND SEAL SKINS:

The Danish Royal Greenland Trade Department held an auction of Greenland seal skins in Copenhagen on March 6, 1963. At the auction, 13,147 Greenland ringed seal skins, 132 bladdernosed seal skins, 1,386 harp seal skins, and 24 saddle seal skins, were offered for sale. (United States Embassy, Copenhagen, February 20, 1963.)

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NEW FROZEN FISH PRODUCT TO BE MARKETED:

A new fishery product--skinless and boneless plaice--has been developed by a large Danish filleting and freezing firm in Fredericia, Denmark. The breaded and frozen product has the same appearance as fresh headless plaice. It may be cooked without thawing and served in the same manner as plaice with skin and bones. It was expected to appear on the Danish market in February 1963. Substantial orders for the new product have been received from the United Kingdom and the Continent.

A production of 60,000 boneless and skinless plaice per day is planned on a new processing line when the cold weather moderates and supplies of raw material become adequate. A patent has been applied for on the process. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, January 23, 1963.)

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SOVIET INTERFERENCE WITH FISHING OPERATIONS REPORTED:

In the last year or two the Danish Fisheries Ministry has had 4 or 5 cases of Soviet interference with Danish fishing operations reported to it. All occurred in the Danish salmon fishery in the Eastern Baltic Sea. Since it is difficult to prove responsibility for interference or damage, the evidence was deemed adequate, in only two cases, to present to the Danish Foreign Office for referral to the Soviets. In each of those instances, the Danish fishermen had secured the registered number of the vessels they believed were responsible. In the first case, the Soviets replied that it had no fishing vessel with such a number, which apparently has settled the issue. There has not yet been a report on the second case.

The Fisheries Ministry has stressed the very great difficulty in proving when and how gear was lost and by whom the loss was caused. In the Baltic Sea, for example, it is difficult to distinguish between Soviet, Polish, and East German trawlers.

Danish salmon cutters occasionally are apprehended for fishing in Soviet territorial waters.

Local newspapers reported, in the latter half of 1962, complaints by fishing vessels from Skagen, fishing port at the northern tip of Denmark, that Soviet trawlers discarded worn out pieces of fishing gear in the Kattegat. In several instances, the gear fouled the screws of Danish fishing craft. These com-

Denmark (Contd.):

plaints were not brought to the attention of the Fisheries Ministry for action.

On January 26, 1963, an Esbjerg cutter captain reported to the Esbjerg daily paper that on January 8, while fishing in the Eastern Baltic Sea off the Esthonian coast, his cutter lost half its gear--a long-line carrying 900 hooks and 12 lighted buoys used to mark the location of the long line. At the same time a Danish cutter from Bornholm, a Danish island just south of Sweden, lost a long line carrying 600 hooks and 10 lighted buoys. The two cutters had set their gear over a stretch of 25 miles about 16 nautical miles off the coast. When the gear was hauled, the loss of hooks, line and buoys was noted and, later, Soviet trawlers were observed near the remainder of the long line. On board the trawlers, which fish for cod and brisling, buoys similar to those lost were observed. One trawler tossed two of the buoys overboard from which the batteries, lamps, and wiring had been removed. Photographs of the trawlers and their registered numbers were obtained.

The Esbjerg cutter captain planned to report his loss to the Fisheries Ministry in the hope that he may secure permission to enter Soviet ports to seek the lost gear. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, February 8, 1963.)

Faroe Islands

TUNA FISHERY IN CARIBBEAN AND OFF WEST AFRICA PLANNED:

Faroese fishing interests are planning to use the vessels with which they now catch herring shark (Lamna cornubica) to fish for tuna during the off-season for shark. Beginning in January, February, and March 1964, after completing the herring shark season in the Northwest Atlantic off the North American coast, five freezer vessels (4 Faroese and Norwegian and 1 Danish) will travel south along the United States coast to fish for tuna in the Caribbean. Later they will cross the South Atlantic to seek tuna off West Africa. The freezerships will be equipped with long lines and also with purse seines and power blocks. They hope to fish for tuna 3-6 months in order to keep the vessels operating profitably the entire year. One 300-ton Faroese freezer vessel is now being built to take part in the combined fishery.

In 1961 Faroese freezerships fished intensively off Newfoundland, catching herring shark valued at US$362,500 as compared with only $43,500 in 1960. Most of the frozen shark was exported to Italy.

An official of the firm planning the new venture states that the freezer vessels are well equipped for handling tuna but he was uncertain where the catches might be delivered. While the Faroese have not caught tuna heretofore they have had experience with long lines and are very good fishermen. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, February 6, 1963.)

Finland

IMPORT LICENSE REQUIREMENTS REMOVED FOR SOME FISHERY PRODUCTS:

Finland has lifted import license requirements from 343 tariff items, according to a report early in 1963 from the United States Embassy in Helsinki. The freed items include certain fish, certain preserved and canned fish, and specified animal oils. Most products entering Finland from the United States are now free of import licensing requirements.

In a related move, the Finnish Government increased remaining import quotas so that in 1963 importers of goods still subject to global quotas may spend up to 20 percent more for their purchases abroad. Most United States products still subject to controls may enter Finland under global quotas. (International Commerce, U. S. Department of Commerce, January 28, 1963.)

German Federal Republic

IMPORTS OF MARINE OILS, 1960-62:

During 1962, West Germany imported 64,816 metric tons of fish oil (exclusive of fish liver oils) or about 2.3 percent more than the 63,379 tons imported in 1961. In 1960, imports amounted to 65,098 tons. Imports of whale and sperm oil (59,044 tons) in

German Federal Republic (Contd.):

1962 declined 11.7 percent from the 66,905 tons imported in 1961, and were down 25.8 percent from the 79,610 tons imported in 1960.

The over-all imports of oil bearing materials (soybeans, cottonseed, copra etc.) increased sharply in 1962 as compared with fats and oils as such. Imports of 568,131 tons of fats and oils in 1962 were down 11.5 percent from the 641,690 tons imported in 1960. Over the same period imports of oil-bearing materials rose from 1,520,486 tons in 1960 to 1,646,275 tons in 1962, an increase of 8.3 percent. (Foreign Agriculture, March 4, 1963.)

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NEW STERN-TRAWLER:

The new stern-trawler factoryship Fritz Homan, which began fishing in late 1962, is one of the most modern vessels in West Germany's fishing fleet. It was built in a Bremerhaven shipyard by prefabricated methods of construction. The principal dimensions of the 1,319-ton all-welded vessel are: length over-all 76.5 meters (250.9 feet); length between perpendiculars 67.8 meters (222.4 feet); breadth 11.0 meters (36.1 feet); draft 7.3 meters (23.9 feet). The main engine is an 8-cylinder 2,100 horsepower Diesel which gave a speed of 16.2 knots during trials. Fuel oil bunkers have a capacity of 290 metric tons and fresh-water tanks hold a total of 106 tons.

The Fritz Homan can freeze 12 tons of fish a day in its two vertical plate freezers. Frozen fish blocks are held at -30° C. (-22° F.). The vessel has 598 cubic meters (about 782 cubic yards) of fish-holding space, of which all or part can be used for frozen storage. It also has storage space for 70 tons of fish meal and 21 tons of liver oil and fish oil. The vessel's fish reduction plant has a daily capacity of 20 tons of raw material.

The latest fish filleting and heading machines were installed on the Fritz Homan. An interesting feature of the machines is that they can be converted to herring processing. European fishery firms are trying to increase the quantity and improve the quality of herring landings. Several of the large German stern-trawlers have been fishing for herring recently with apparent success.

The deck layout is similar to that of other stern-trawlers built by the Bremerhaven firm. The trawl winch has a capacity on each drum of 1,200 fathoms. A full range of radio, navigational, and fish finding equipment was installed. The vessel carries two radar sets.

Accommodations are provided for a crew of 50. Ship's officers and engineers have single-berth cabins amidships, while the rest of the crew are quartered in forward cabins. (The Fishing News, December 28, 1962.)

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NEW TYPE FISHING VESSEL DESIGNED FOR "LUGGER" FISHERY:

A new type fishing vessel was designed by a Bremerhaven fishing company in conjunction with a local shipyard for the purpose of increasing the efficiency of the "lugger" or medium-size vessel fishery. The fishing company is thinking of building 6 of these vessels.

The vessel is designed for stern trawling, pelagic pair trawling, purse seining, and for fishing with gill nets. The cost of the new vessel is estimated at about DM 2.6 million (US$650,000), including fishing gear, but without a purse seine net.

The vessel will be 450 gross tons and about half the size of the stern factory-trawlers built during recent years by trawler companies for fishing on distant fishing grounds, and will accommodate a crew of 22. It will be powered by a 1,200 hp. Diesel engine to give the vessel a speed of about 12 knots. The operating range will be about 8,000 nautical miles. The vessel will be equipped with a variable pitch propeller to increase its maneuverability. It will carry vertical and horizontal electronic fish-finders as well as a fish spotter which can be attached to the head rope of the trawl to permit adjustments of the depth of the net during mid-water trawling. The working space on the starboard side of the vessel will later permit the installation of fish-processing machinery, if so desired.

The construction of the new vessels is part of a program aimed at increasing the

German Federal Republic (Contd.):

efficiency of the German "lugger" fishery. As a rule German "luggers" catch herring in the North Sea with gill nets from about June through December. For the remainder

Lugger-type trawler, engaged principally in fishing for North Sea herring, docked at Hamburg.

of the year the "luggers" are laid up in their home ports. In recent years, the German "lugger" fishery has endeavored to improve its profits by equipping "luggers" for trawling during the off season for herring. It has become evident, however, that the fishery requires a new type vessel, about twice as large as a conventional "lugger" which can fish faster, employ new fishing techniques, and operate in medium-distant fishing grounds (around Iceland) which cannot be reached by conventional "luggers." (United States Consulate, Bremen, February 1, 1963.)

Greece

OUTBOARD MOTORS HELP GREEK FISHERMEN:

Ten outboard motors manufactured in the United States were delivered by CARE to small fishing cooperatives in the villages of Psarades and Sayades in northern Greece. The motors are being used to mechanize primitive but sturdy craft which were formerly hand-rowed. Mechanization has eased the hard life of the Greek fishermen who, when they worked their boats with oars, toiled almost 18 hours daily and spent weeks away from home. Using the motors, the fishermen can reach fishing grounds in one-fifth the time it would take to row.

The fishermen were trained in motor handling as well as simple maintenance and repair of the motors. More advanced maintenance instruction will be given one representative from each cooperative that received a motor. (Fishing News, December 28, 1962.)

Note: See Commercial Fisheries Review, December 1962 p. 70.

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SPONGE LANDINGS, 1962:

Greek sponge landings in 1962 totaled 68.4 metric tons valued at 30.4 million drachmas (US$1.0 million), as compared with landings in 1961 of 56.5 tons valued at 27.6 million drachmas ($0.9 million). A total of 56 sponge fishing vessels operated in 1962, while 62 vessels worked the sponge beds in the previous year. The widespread use of echo sounders helped fewer vessels land a larger catch in 1962. In addition, new sponge bearing fields were discovered in international waters, while beds in Greek waters continued to yield a good sponge crop. (Alieia, January 1963.)

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FISHERY LANDINGS, 1962:

Greek fishery landings in 1962 were down 4.3 percent in quantity but up 5.0 percent in value from those in the previous year. An increase in the catch in the Atlantic and Mediterranean areas was offset by a decline in the catch from other fishing areas. But the average value of the Atlantic and Mediterra-

Table 1 - Value of Greek Fishery Landings, 1961-1962

Fishing Area	Average Value of Greek Fishery Landings by Fishing Areas			
	1962		1961	
	Drachmas/Kilogram	U.S. Cents/Pound	Drachmas/Kilogram	U.S. Cents/Pound
Atlantic	10.0	15.1	10.2	15.4
Mediterranean	7.5	11.3	9.2	13.9
Middle and near water (trawlers and purse-seiners)	1/ 9.0	13.6	7.3	11.0
Inshore	14.0	21.2	12.5	18.9
Lagoons and lakes	16.0	24.2	15.0	22.7
	Value of Total Greek Fishery Landings			
	Million Drachmas	Million US$	Million Drachmas	Million US$
Total landings	869.0	29.0	828.0	27.6

1/Estimated
Note: 30 Greek drachmas equal US$1.00.

Greece (Contd.):

Table 2 - Greek Fishery Landings by Fishing Areas, 1961-1962

Fishing Area	1962	1961
	(Metric Tons)	
Atlantic	17,000	14,500
Mediterranean	10,000	8,500
Middle and near water (trawlers and purse seiners)	48,000	53,000
Inshore	8,000	10,000
Lagoons and lakes	5,000	6,000
Total landings	88,000	92,000

nean catch declined, while there was a substantial increase in the average value of the catch from other areas. (Alieia, a Greek fishery periodical, January 1963.)

Note: See Commercial Fisheries Review, August 1963 p. 62.

Iceland

EXPORTS OF FISHERY PRODUCTS, JANUARY-OCTOBER 1962:

During January-October 1962, there was a considerable increase in exports of frozen herring, frozen fish fillets, salted herring, herring oil, herring meal, and frozen whale meat as compared with the same period in 1961, according to the Statistical Bureau of

Icelandic Fishery Exports, January-October 1962 with Comparisons

Product	Jan.-Oct. 1962			Jan.-Oct. 1961		
	Qty.	Value f.o.b.		Qty.	Value f.o.b.	
	Metric Tons	1,000 Kr.	US$ 1,000	Metric Tons	1,000 Kr.	US$ 1,000
Salted fish, dried	2,353	47,045	1,091	3,970	75,991	1,869
Salted fish, uncured	25,190	304,649	7,068	27,532	278,011	6,839
Wings, salted	997	11,446	266	1,290	11,937	294
Stockfish	8,293	215,573	5,001	9,769	209,881	5,163
Herring on ice	4,899	17,144	398	3,756	9,641	237
Other fish on ice	31,825	114,863	2,665	24,982	122,880	3,023
Herring, frozen	17,167	94,117	2,184	10,628	48,227	1,211
Other frozen fish, whole	2,303	28,956	672	1,869	21,404	527
Frozen fish fillets	43,425	760,420	17,642	34,057	531,075	13,064
Shrimp and lobster, frozen	355	36,315	843	399	31,372	772
Roes, frozen	693	13,204	306	540	7,355	181
Canned fish	280	14,841	344	191	12,185	300
Cod-liver oil	4,437	34,072	790	4,824	39,609	974
Lumpfish roes, salted	421	6,411	149	486	8,237	203
Other roes for food, salted	2,746	37,036	880	2,475	24,960	614
Roes for bait, salted	1,367	8,678	201	1,348	8,131	200
Herring, salted	36,376	335,887	7,793	22,538	205,677	5,060
Herring oil	40,056	177,180	4,111	13,770	77,981	1,918
Ocean perch oil	15	59	1	480	2,572	63
Whale oil	1,687	13,660	317	917	6,452	159
Fish meal	19,516	122,314	2,838	26,820	107,666	2,649
Herring meal	39,251	256,554	5,952	24,479	124,323	3,058
Ocean perch meal	252	1,440	33	2,581	16,170	398
Wastes of fish, frozen	6,442	16,867	391	11,004	19,915	490
Liver meal	308	2,029	47	315	1,822	45
Lobster and shrimp meal	198	786	18	318	755	19
Whale meal	502	2,713	63	1,342	4,955	122
Whale meat, frozen	2,408	18,167	421	1,547	11,127	274

Note: Values converted at rate of 1 krone equals 2.42 U. S. cents in 1962 and 2.46 U. S. cents in 1961.

Iceland's Statistical Bulletin, November 1962. Exports of fish meal, ocean perch meal, frozen fish waste, lobster and shrimp meal, whale meal, and dried salted fish decreased in the first ten months of 1962.

Note: Iceland's exports of fishery products, as shown in Commercial Fisheries Review, Jan. 1963 p. 92, cover January-September 1962 instead of January-October 1962.

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FISHERIES TRENDS, EARLY FEBRUARY 1963:

New Center for Fish Processing: An area in the Reykjavik inner harbor will be the site for a new fish-processing center. Several fishing companies have been granted building lots in the area and seven more are reported to be on a waiting list. The construction of two new plants at the center has already begun. The only previous processing plant at the location was a herring reduction plant which has been virtually inoperative since its erection 13 years ago. The new location will be favorable for various types of fish processing, since fish can be hauled from unloading vessels to the plants in three minutes.

New Method of Smoking Salmon: According to Icelandic newspapers, a French specialist visited Iceland in early 1963 to teach a method of smoking salmon more lightly to personnel of an experimental plant of the Federation of Cooperatives. The lighter type of curing, which is popular in Europe and England, requires first quality fish. The product will be marketed in Iceland under a trade name. It will be boneless without fins, but with the skin on, and vacuum packed. In the near future the experimental plant will start marketing other smoked products such as haddock, kippers, trout, and lumpfish. (United States Embassy, Reykjavik, February 8, 1963.)

Note: See Commercial Fisheries Review, March 1963 p. 67.

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FROZEN FISH PRODUCTION, 1962:

In 1962, a record quantity of about 82,000 metric tons of fish was frozen in Iceland, up 5.6 percent from the 77,619 tons produced in 1961. The increase was due to greater freezings of herring from the excellent catch off the southwest coast. Frozen herring production amounted to 25,500 tons in 1962, as compared with only 3,733 tons in 1960. Groundfish freezings in 1962 totaled 45,500 tons. Iceland had about 90 freezing plants operating in 1962 with improved equipment which increased their capacity.

Most of Iceland's frozen fish production is exported through the Icelandic Freezing Plants Corporation. Icelandic frozen fish is also exported by a new firm which began operating in 1962, and the Fisheries Department of the Federation of Cooperatives. (United States Embassy, Reykjavik, February 15, 1963.)

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Iceland (Contd.):

FISHERY LANDINGS BY PRINCIPAL SPECIES, JANUARY-SEPTEMBER 1962:

Species	January-September	
	1962	1961
	(Metric Tons)	
Cod	165,719	175,589
Haddock	28,964	27,086
Saithe	8,710	8,374
Ling	4,758	4,034
Wolffish (catfish)	11,554	11,338
Cusk	3,781	3,677
Ocean perch	15,134	23,464
Halibut	1,119	1,214
Herring	412,715	250,805
Shrimp	349	990
Lobster	2,315	1,488
Other	7,397	7,712
Total	662,515	515,771

Note: Except for herring which are landed round, all fish are drawn weight.

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UTILIZATION OF FISHERY LANDINGS, JANUARY-SEPTEMBER 1962:

How Utilized	January-September	
	1962	1961
	(Metric Tons)	
Herring[1/] for:		
Oil and meal	330,953	180,767
Freezing	18,194	10,730
Salting	55,515	55,075
Fresh on ice	7,718	4,119
Canning	336	114
Groundfish[2/] for:		
Fresh on ice landed abroad	16,540	19,994
Freezing and filleting	118,803	125,506
Salting	68,115	64,532
Stockfish (dried unsalted)	32,793	43,028
Home consumption	8,121	6,201
Oil and meal	2,764	3,227
Shellfish for:		
Freezing: Lobster	2,314	1,488
Shrimp	263	747
Canning (shrimp)	86	243
Total production	662,515	515,771

1/Whole fish.
2/Drawn fish.

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HERRING LANDINGS DECLINE AFTER MID-JANUARY:

Iceland's unfavorable weather conditions during the third week of January reduced herring landings, but total landings were far ahead of last year's record. As of January 19, total landings amounted to 110,772 metric tons as compared with 88,089 tons on the same date in 1962. Many vessels in mid-January were shifting to line fishing for groundfish. (U. S. Embassy, Reykjavik, January 25, 1963.)

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NEW PROTOCOL TO SOVIET TRADE AGREEMENT AFFECTS FISHERY EXPORTS:

The commodities covered by the new 1963-1965 Protocol to the Icelandic-Soviet Trade Agreement of August 1, 1953, were announced in January 1963. For the first time, Icelandic canned fishery products were included. But Icelandic shipments of frozen fillets to the U.S.S.R. will be reduced substantially by the new Protocol.

Under the new 3-year Protocol, Iceland will deliver annually to the U.S.S.R., 15,000 to 20,000 metric tons of frozen fillets, 12,000 tons of frozen herring, 14,000 to 15,000 tons of salted herring and Kr. 7 million (US$162,564) of canned fishery products.

The Protocol for 1960-1962 called for Iceland to deliver annually to the U.S.S.R. 30,000 to 32,000 tons of frozen fillets, an unspecified quantity of frozen herring, and 12,000 tons of salted herring. (United States Embassy, Reykjavik, January 25, 1963.)

Notes: Iceland kronur 43.06 equals US$1.
See Commercial Fisheries Review, July 1960, p. 50.

Ireland

SOVIET VESSEL CONVICTED OF VIOLATION OF TERRITORIAL WATERS:

On January 14, 1963, the Soviet fishing vessel Paltus was convicted in an Irish District Court of a violation of Ireland's territorial waters. The Soviet trawler was prosecuted under Sections 221 (unlawful entry) and 222 (violation after lawful entry) of the Fisheries (Consolidation) Act of 1959 and convicted only under Section 221 of the Act.

The conviction appears to have had no deterrent effect on Soviet intentions to expand fishing in the Irish Sea, for on January 22, a Soviet newspaper is reported to have announced plans to send more fishing vessels to "this promising area of the Atlantic." That official Soviet news agency remarked that the Irish Sea was the 10th fishing area in the Atlantic to be opened up by Latvian ships in the past two years.

The Soviets are not the only nationals showing an interest in the waters off the southeast coast where the herring have been running well. Polish, Dutch, Belgian, and

Ireland (Contd.):

French trawlers have been operating outside territorial waters since Christmas. On January 22, a French trawler was arrested on a charge of infringing Ireland's territorial limit.

Irish fishermen claim that foreign trawlers are catching a large proportion of the fish that would otherwise come further inshore into their own nets. Evidence that this may lead to renewed pressure on the Government to extend the fishing limit to 12 miles was provided by a question to this effect raised in the Dail (Lower House) on January 24, 1963. The Minister for External Affairs replied by regretting that no international agreement had been achieved since the failure of the Law of the Sea Conference in 1960, by assuring the inquiring deputy that "the Government have constantly in mind the question of extending fishing limits by international agreement rather than by unilateral action," and by adding "we are still in touch with a number of Governments with a view to securing a regional agreement as the prospect of securing a world wide agreement seems at present rather remote." (United State Embassy, Dublin, February 1, 1963.)

Israel

NEW DIESEL-ELECTRIC STERN-TRAWLER LAUNCHED:

The 1,500-ton stern-trawler Hiram I, built in Le Havre, France, at a cost of US$1.5 million for Israeli and Swiss interests, was launched in November 1962. The vessel includes such modern features as Diesel-electric propulsion, blast freezing tunnels, radar equipment, and air conditioned cabins for the 45-man crew. The new vessel is powered by three French-built Diesel engines which generate electric power used to turn the propellors and operate the fishing gear. The Diesel-electric system makes it possible to moderate speeds smoothly, picking up either slowly or quickly to top speed of 15 knots. The engines can be controlled from three positions: the navigation bridge, located about two-thirds of the way forward; the fishing bridge, mounted amidships on the after part of the superstructure with an unobstructed view of fishing operations; and the engine room. The ship is provided with the usual navigational and fish-finding equipment in addition to radar. The trawl can be operated at depths up to 200 fathoms. Semi-automatic steering is controlled by a British-made gyroscope.

During fishing operations, the trawl is hauled up a stern chute onto the main deck. The fish are dropped through a hydraulically-controlled hatch to the deck below, where they are sorted, cleaned, and prepared for freezing. Two blast freezing tunnels, with a daily capacity of 20 metric tons of fish, freeze the fish at -40° C. (-40° F.). The frozen fish are packed in plastic bags and moved to the fish hold one deck down, where they are stored at -20° C. (-4° F.). Total capacity of the fish hold is 350 tons.

Following a shakedown cruise to the Grand Banks off Newfoundland in February or March 1963, the Hiram I was to begin fishing off the northwest coast of Africa. The vessel's fish catch is expected to be consumed almost entirely in Israel. The Hiram I will be operated by a new fishing company created by the Israeli labor federation, Histadrut, which owns the vessel jointly with Swiss shipping interests. The vessel is reported to be the first of a series of Diesel-electric trawlers, some of which may be built in Israel. (United States Consulate, Le Havre, February 4, 1963.)

Italy

TWENTY-THIRD INTERNATIONAL FISHING FAIR:

The XXIII International Fishing Fair and the VIII Nautical Exposition are scheduled to be held June 22-August 7, 1963, in Ancona, Italy. Included in the exhibits will be fishing equipment and items connected with nautical sports.

Japan

EXPORTS OF FROZEN TUNA, CALENDAR YEARS 1961 and 1962:

Frozen tuna exports to the United States in 1962 increased 24 percent in quantity and 45 percent in value, as compared with 1961. Marked increases occurred also in frozen tuna exports to Europe--up 17 percent in

Japan (Contd.):

Japanese Exports of Frozen Tuna, Calendar Years 1961 and 1962

Country of Destination	1962		1961	
	Quantity	Value	Quantity	Value
	Tons	US$ 1,000	Tons	US$ 1,000
United States and Canada:				
Direct shipments	71,600	26,666	57,386	19,117
Transshipments	38,598	12,370	31,454	7,849
Total (Short Tons f.o.b.)	110,198	39,036	88,840	26,966
Italy	33,417	10,817	26,276	7,308
Yugoslavia	7,731	2,874	9,454	2,901
France	3,415	1,394	-	-
Ghana	834	170	92	17
Tunisia	480	165	606	180
Australia	160	21	-	-
Czechoslovakia	433	162	1,776	463
Spain	50	18	690	158
Cuba	330	83	300	87
Libya	575	190	395	110
Others	-	-	290	77
Total (Metric Tons c.i.f.)	47,425	15,894	39,879	11,301

Source: Suisan Tsushin, February 12, 1963.)

quantity and 40 percent in value. (Suisan Tsushin, February 12, 1963.)

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EXPORT QUOTAS FOR FROZEN TUNA, FISCAL YEAR 1963:

The Tuna Committee of the Japan Frozen Foods Exporters Association met on February 5, 1963, for the third time, and considered quotas of frozen tuna for export to the United States (includes Canada) and Europe (mostly Europe, but includes shipments to North Africa and a few other areas) in the 1963 fiscal year (April 1963-March 1964).

The April 1963-March 1964 frozen tuna export quotas are: (1) to the United States and Canada, 110,000 short tons (unchanged from 1962 fiscal year); (2) to the European area, 70,000 metric tons; and (3) frozen tuna loins, 6,000 short tons (mostly to the United States).

The shipments of frozen tuna (exclusive of tuna loins) under the quotas for the Japanese 1963 fiscal year will be made in three periods--April-September, October-January, and February-March. Members of the Association will be required to turn over to the Association 30 percent of their allotments. This amount becomes a "free quota." Any frozen tuna export quota unused at the end of a period shall become part of the free quota for the following period. The free quota can be used in any of the three periods within the fiscal year by exporters who have exhausted their allotment without limitation as to quantity.

The method of allocating the exports of tuna loins was not decided at the Association's February 5 meeting. (Japanese newspaper, February 7, 1963.)

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NEW BASES FOR ATLANTIC OCEAN TUNA FISHERY UNDER CONSIDERATION:

With the increasing number of Japanese tuna vessels operating in the Atlantic Ocean, the tuna fishing bases in West Africa are crowded. Japanese tuna vessels operating in the Atlantic number about 120 per year, including 73 vessels belonging to the Prefectural Skipjack Tuna Fishermen's Association and 19 vessels from other fisheries cooperatives. The fishing bases in Africa including Las Palmas, Dakar, Freetown, Abidjan, Accra, Tema, and Lagos are playing an important role as transshipping points for direct exports of tuna to Europe and the United States.

The increasing number of vessels using those bases are making local facilities inadequate and tuna vessels are looking for new overseas bases. According to information received by a large Japanese fishing company recently, Sao Vincente Island of the Cape Verde Islands (Portugal) is beginning to attract the attention of tuna vessel owners.

The following is the report received from the Azuma Maru No. 16 (439 tons):

The Cape Verde Islands comprise nine islands of a volcanic group around 16°52' N. lat., 25° W. long. in the Atlantic off the southwest coast of Africa, one of which is Sao Vincente Island and its deep harbor of Port Grande. The first Japanese tuna vessel to stop at this port was the Shinyo Maru, followed by the Azuma Maru No. 16, Azuma Maru No. 23, and the carrier Banshu Maru No. 2.

Port Grande is surrounded by mountains in three directions, opening in the west. Quays are used for customs purposes, taking on oil, and for fish landings. Two more docks are under construction, 400 meters (437.4 yards) and 150 meters (164.0 yards) in length, plus 3 cranes will be ready in a few months. Longshoremen are not experienced, but are capable of landing 6.4 tons of frozen tuna in an hour.

Japan (Contd.):

A local fishery company owns 2 of the 45-ton, 3 of the 35-ton, and 4 of the 125-ton vessel classes plus 1 of the 150-ton class equipped with radio telephone and capable of fishing for skipjack tuna with hook and line, long lines, and purse seine. A cold storage plant has a capacity of 6,000 tons and can maintain a temperature of -20° to 25° C. (-4° to 13° F.) Ice-making capacity is 3 tons a day which is expected to be increased to an 80 ton capacity in a year or two. A packing plant will be completed in two months.

The advantages of Port Grande as a base are: (1) simplicity of quarantine and customs clearance, (2) labor is cheap, (3) tariffs are low, (4) suitable for anchoring, (5) it takes only four days to reach fishing grounds and is located within short range of a seasonal fishery for yellowfin and big-eyed tuna, and (6) overtime is available. Among the defects are: (1) prices of commodities are high including water and provisions, and (2) there are only a few repair shops available. (Japanese newspaper, February 1, 1963.)

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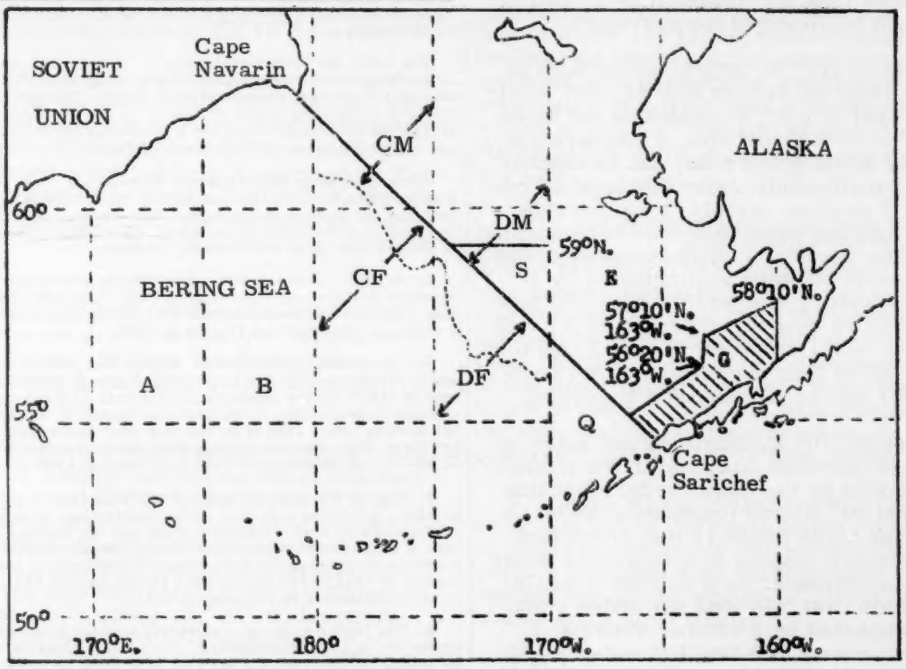
BERING SEA BOTTOMFISHING AREAS SET FOR 1963:

A total of 19 motherships (includes 2 winter fleets), accompanied by 252 catcher vessels and 8 portable catcher vessels, will be permitted to conduct bottomfishing in the Bering Sea in 1963, the Japanese Government announced on February 26, 1963. This represents a substantial reduction in fleet size compared to 1962.



Based on the area division, fishing areas shall be assigned as follows:

A. Mothership-type bottom trawl fishery:

(1) Fish meal factoryship - Areas CM, IM, and E.

(2) Fish-meal-oil factoryship - Areas CF, DF, and Q.

(3) Freezer factoryship - Areas A, B, CF, DF, Q, and S.

(4) Closed to trawling - Area G.

B. Mothership-type long-line and gill-net fisheries. Mothership fleets operating long lines and gillnets are authorized to operate in Areas A, B, and CF.

Japan (Contd.):

The 1963 Bering Sea area license regulations are:

1. Between 180° longitude and 170° W. longitude at depths of less than 150 meters (492 feet) and the area east of 170° W. longitude and north of the line extending from Cape Navarin to Cape Sarichef, Unimak Island (hereafter referred to as the Navarin-Sarichef line), 2 motherships and 47 catcher vessels (1 mothership under 10,000 gross tons accompanied by 17 catcher vessels, and another mothership of 10,000-12,000 gross tons accompanied by 30 catcher vessels) will be licensed for operation.

2. East of 180° longitude and south of the Navarin-Sarichef line, one mothership under 12,000 gross tons accompanied by 27 catcher vessels will be licensed for operation.

3. East of 170° E. longitude and west of 180° longitude, as well as east of 180° longitude and west of 175° W. longitude but south of the Navarin-Sarichef line, 5 motherships, each under 4,000 gross tons, and 24 catcher vessels (1 mothership under 500 tons accompanied by 2 catcher vessels, 1 mothership over 500 tons but under 650 tons accompanied by 2 catcher vessels, 1 mothership over 650 tons but under 800 tons accompanied by 3 catcher vessels, 1 mothership over 800 tons but under 2,000 tons accompanied by 5 catcher vessels, and 1 mothership over 2,000 tons but under 4,000 tons accompanied by 12 catcher vessels) will be licensed for operation.

4. East of 170° E. longitude and south of the Navarin-Sarichef line, and in the triangular area bound by the Navarin-Sarichef line and latitude 59° N. and longitude 170° W., 9 motherships, each under 12,000 gross tons, and 135 catcher vessels (1 mothership under 700 tons accompanied by 2 catcher vessels, 1 mothership over 700 tons but under 1,500 tons accompanied by 5 catcher vessels, 1 mothership over 1,500 tons but under 2,500 tons accompanied by 12 catcher vessels, 1 mothership over 2,500 tons but under 3,500 tons accompanied by 9 catcher vessels, 1 mothership over 3,500 tons but under 4,500 tons accompanied by 14 catcher vessels, 1 mothership over 4,500 tons but under 6,000 tons accompanied by 18 catcher vessels, 1 mothership over 6,000 tons but under 9,000 tons accompanied by 28 catcher vessels, 1 mothership over 9,000 tons but under 11,000 tons accompanied by 21 catcher vessels and carrying 6 small portable fishing vessels, and 1 mothership over 11,000 tons but under 12,000 tons accompanied by 26 catcher vessels and carrying 2 portable vessels) will be licensed for operation. (Suisan Keizai Shimbun, February 27, 1963.)

Note: See Commercial Fisheries Review, June 1962 p. 56.

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BERING SEA KING CRAB REGULATIONS FOR 1963 ANNOUNCED:

The Japanese Fisheries Agency announced on January 21, 1963, king-crab fishing regulations for the Bering Sea. According to this announcement, the Agency will permit the packing of canned king crab by those companies which were previously licensed to pack frozen king crab only. Instead of the split two-season system (spring and fall), there will be only one fishing season extending from April to November 30.

In previous years, king crab freezer vessels operating in the eastern Bering Sea in the fall were not permitted to operate in the area fished in spring and summer by the canned crab factoryship Tokei Maru. This area restriction will be abolished.

For 1963, the Fisheries Agency is licensing the operation of two king crab canning factoryships. They are to be operated by two groups, designated as A and B. The quota for Group A (consisting of five firms) is 115,000 standard cases (6-1/2-oz. 48 cans/cs.) and the quota for Group B (consisting of four firms) is 120,000 standard cases.

Some companies had requested increases in their production quota for 1963, but the Agency reportedly is not granting any in view of indications that the eastern Bering Sea king crab resource is declining. As evidence, the Agency is said to have cited the following reasons:

1. Studies conducted with experimental fishing nets have revealed that the catch-per-unit of "tan" (Japanese unit of king crab net) has declined from 13.7 male crabs in 1960 to 7 crabs in 1961, and to 4.1 crabs in 1962.

2. Net soaking time (number of days that gear is left in water before hauling) has increased. Although the catch-per-unit of "tan" for the Japanese commercial fleet has not changed substantially, it has been maintained by increasing net soaking time. Data from the king crab factoryship Tokei Maru show that net soaking time has increased from an average of 7-10 days in 1957 to 18 days in 1962.

3. Size of the commercially-caught king crab is getting smaller, indicating a decline in the average age of commercial-sized king crab. Past data show that the average body size of king crab in the eastern Bering Sea, as measured by carapace length, has declined from 170 millimeters (6.7 inches) in 1953 to 161 millimeters (6.3 inches) in 1959, and to 158 millimeters (6.2 inches) in 1962.

4. The tanner crab--a competitive species to the king crab--are migrating northward. They can be considered as having invaded the habitat of the king crab, as the king crab declined in abundance.

5. King crab attain commercial size after eight years. Thus, high catches can be maintained for a number of years even in cases when stocks are overfished, for high catches do not immediately affect recruitment. However, if the brood stock continues to decline in abundance and this effect is manifested in recruitment, then the resources will decline rapidly and will take a very long while to recover.

The Japanese fishing companies are reported to have requested that the fishing season be advanced 15 days, to commence from March 15, and it appears that the agency will act favorably on this request.

Japan (Contd.):

The fishing companies in Group A are reported to be planning on dispatching the factoryship Dainichi Maru, while those in B are expected to utilize the factoryship Tokei Maru. (Suisan Keizai Shimbun, January 22 and 24; Suisan Tsushin, January 22, 1963.)

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FISHERIES AND LICENSING POLICIES DESIGNATED BY CENTRAL FISHERIES COORDINATION COMMISSION:

The Japanese Government's Central Fisheries Coordination Commission (which serves in an advisory capacity to the Minister of Agriculture and Forestry on such matters as licensing and fishing regulations) approved on January 16, 1963, the draft of the ordinance relating to designation of the Japanese fisheries into 18 categories and the licensing policy governing each of the 18 fisheries.

The 18 designated fisheries and vessel requirements for each of the 18 fisheries were made public on January 16. Regulations concerning the licensing policy for each of the 18 fisheries were publicly announced on February 1, when they became effective. Press reports indicated that the regulations were severely criticized by different segments of industry.

The 18 designated fisheries and vessel requirements are listed below. The term Pacific Ocean includes the Bering Sea, Okhotsk Sea, Japan Sea, Yellow Sea, and East China Sea.

1. Offshore Bottom Trawl Fishery: Bottom trawl fishery (excluding the bottomfish fisheries specified in Items 5 and 17 conducted with powered fishing vessels over 15 tons gross in the Pacific Ocean north of 25° N. latitude, west of 153° E. longitude, and east of the line beginning from the Korean mainland south along 128°30' E. longitude until it intersects 34° N. latitude, and connecting the points 34° N. latitude-128°30' E. longitude; 33°9'15" N. latitude-128° E. longitude; 33°9'15" N. latitude-128° E. longitude; and 33°9'15" N. latitude-128°30' E. longitude, and extending south along longitude 128°30' E. south of latitude 33°9'15" N.

2. East China Sea Bottom Trawl Fishery: Bottom trawl fishery (excluding the bottomfish fishery specified in Item 5) conducted with powered fishing vessels over 15 tons gross in the Pacific Ocean north of 25° N. latitude and west of the line described in Item 1.

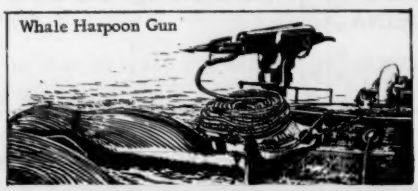
3. Distant-water Trawl Fishery: Bottom trawl fishery (excluding the bottomfish fishery specified in Items 5 and 17) conducted with powered fishing vessels over 15 tons gross in the Pacific Ocean, but not including the area north of 25° N. latitude and west of 153° E. longitude.

4. Northern Water Long-line and Gill-net Fishery: Long-line and gill-net fisheries (excluding those fisheries specified in Item 5 and Items 11-17) conducted with powered fishing vessels in the Pacific Ocean north of 50° N. latitude and east of 170° E. longitude.

5. Mothership-type Bottomfish Fishery: Bottom trawl, long-line, and gill-net fishing operations (excluding those fisheries specified in Items 12, 13, 16, and 17) conducted by mothership fleets. A mothership is a vessel equipped with production, refrigeration, and processing facilities, and is accompanied by a fleet of catcher vessels, as specified in Paragraph 1, Article 52 of the Japanese Fishery Law.

6-7. Large- and Medium-Class Surrounding Net Fishery: Surrounding net fishery conducted with powered fishing vessels over 40 tons gross. However, in the area south of the line running due east from the point midway between Cape Esan in southeast Hokkaido and Cape Shiriya in Aomori Prefecture and east of the line running due south from the lighthouse at Cape Nojima in Chiba Prefecture, the surrounding net fishery conducted with powered vessels over 15 tons gross.

8. Large Whale Fishery: Whaling operations (excluding the whale fishery specified in Item 10) conducted with powered fishing vessels equipped with harpoon guns for harvesting whalebone whales (excluding Minke's whale) and sperm whales.


Whale Harpoon Gun

9. Small Whale Fishery: Whaling operations (excluding the whale fishery specified in Item 10) conducted with powered fishing

Japan (Contd.):

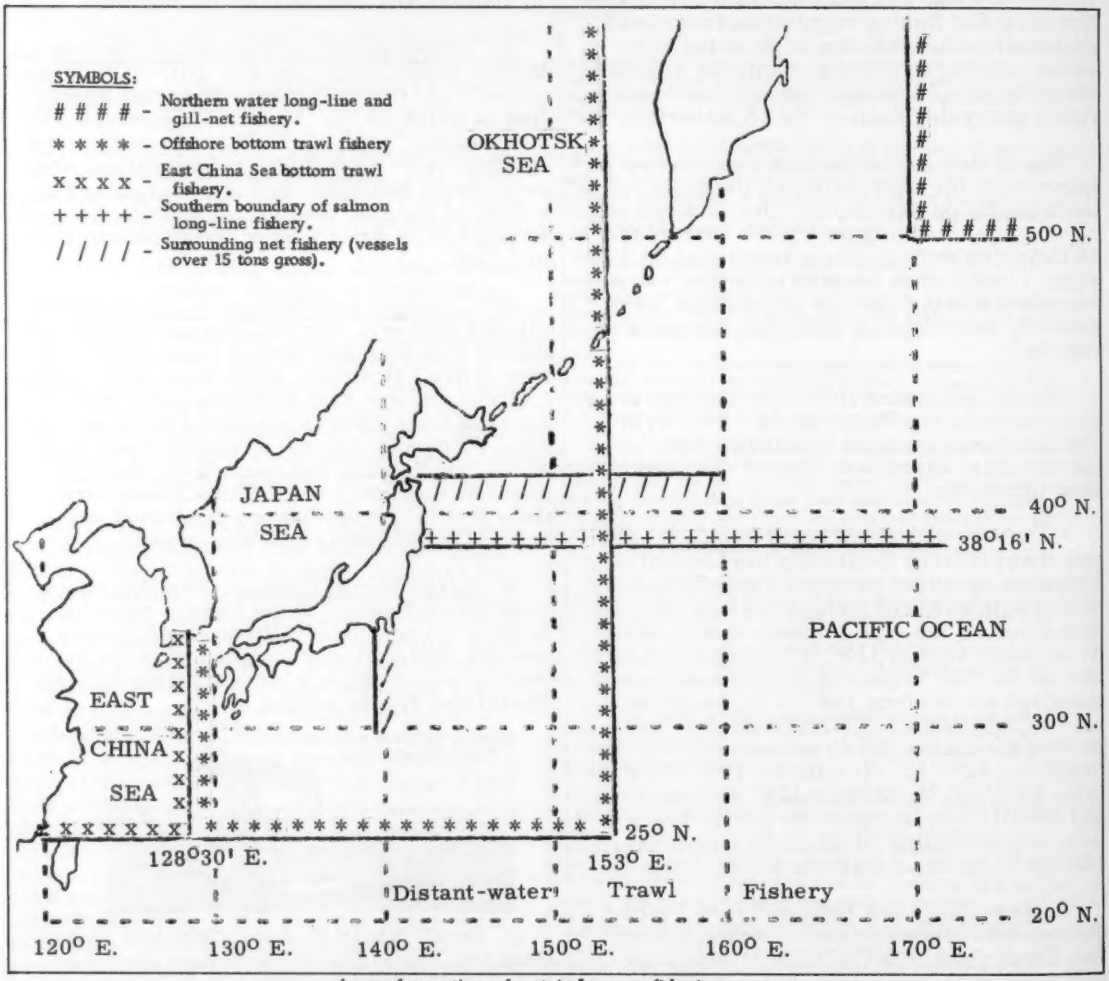
vessels equipped with harpoon guns for harvesting Minke's whale or toothed whales (excluding sperm whales).

10. Mothership-type Whale Fishery: Mothership-type whaling operations in which harpoon guns are used to harvest whales.

11. Distant-water Tuna Fishery: Long-line and pole-and-line fisheries (excluding the fisheries specified in Items 12 and 13) conducted with powered fishing vessels (over 40 tons gross) for harvesting tuna, spearfish and shark. (Tuna vessels in the 40-99 ton range were formerly classified as medium-class tuna vessels and those over 100 tons as distant-water vessels.)

12. Portable-vessel-carrying Mothership-type Tuna Fishery: Mothership-type fishery conducted with powered portable catcher vessels for harvesting tuna, spearfish, and shark with long-line or pole-and-line gear. (Portable catcher vessels are normally carried by the mothership except during actual fishing operations.)

13. Regular Mothership-type Tuna Fishery: Mothership-type fishery conducted with catcher vessels (other than portable catcher vessels) for harvesting tuna, spearfish, and shark with long-line or pole-and-line gear.



Areas of operations of certain Japanese fisheries.

Japan (Contd.):

14. Medium-class Drift Gill-net Salmon Fishery: Drift gill-net salmon fishery (excluding mothership-type fishery specified in Item 16) conducted with powered fishing vessels over 30 tons gross.

15. Medium-class Long-line Salmon Fishery: Long-line salmon fishery (excluding mothership-type salmon fishery specified in Item 16) conducted in the Pacific Ocean north of 38°16' N. latitude (excluding Japan Sea) with powered fishing vessels over 10 tons gross.

16. Mothership-type Salmon Fishery: Mothership-type fishery connected with the taking of salmon.

17. Mothership-type Crab Fishery: Mothership-type fishery connected with the taking of king crab and Abura crab.

18. Shellfish Fishery: Fishery conducted with powered fishing vessels over 20 tons gross for harvesting certain designated species of shellfish with diving equipment.

Vessel requirements for the designated fisheries listed above are as follows:

1. Northern Water Long-line and Gill-net Fishery: Vessel must be over 100 tons gross.

2. Mothership-type Bottomfish Fishery: Motherships must have refrigeration equipment. Catcher vessels must be over 50 tons gross.

3. Large Whale Fishery: Catcher vessels must be over 100 tons gross and equipped with direction finder.

4. Mothership-type Whale Fishery: Motherships must be over 10,000 tons gross and equipped with whale processing and whale-oil manufacturing facilities, as well as with direction finder, loran, and radar. Catcher vessels must be over 300 tons gross and equipped with radar and direction finder.

5. Portable-vessel-carrying Mothership-type Tuna Fishery: Motherships must have refrigeration equipment. Portable fishing vessels must be under 20 tons gross.

6. Regular Mothership-type Tuna Fishery: Motherships must be over 3,000 tons gross and have refrigeration equipment.

7. Medium-size Salmon Drift Gill-net Fishery: Vessels must be equipped with direction finder, and with either wireless or radiophone.

8. Medium-size Salmon Long-line Fishery: Vessels must be equipped with direction finder and with either wireless or radiophone.

9. Mothership-type Salmon Fishery: Motherships must be over 5,000 tons gross and equipped with refrigeration and canning facilities, direction finder, loran, and radar. Catcher vessels must be over 50 tons gross and equipped with direction finder and with either wireless or radiophone.

10. Mothership-type Crab Fishery: Motherships must be over 2,000 tons gross and equipped with automatic counter, canning equipment, direction finder, loran, and radar. Catcher vessels must be over 50 tons gross and equipped with direction finder and with either wireless or radiophone. (Nihon Suisan Shimbun, January 18 and February 2, 1963; and other sources.)

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INDUSTRY MISSION SEEKS FISHERY AGREEMENT WITH COMMUNIST CHINA:

A 5-man fishing mission led by the president of one of the largest Japanese fishing companies (also chairman of the Japan-Communist China Fishery Council), returned to Tokyo, February 2, this year, after a 3-week visit in Communist China. At an airport press conference the Mission's leader predicted that a private Japan-Communist China fishery agreement would be signed next fall.

While in Peiping, the Mission signed a memorandum with the Communist Chinese in which the parties confirmed the possibility of concluding private agreements between Japan and Communist China on fishing problems, the desirability of meeting again before the end of the year to discuss fishery problems in the Yellow and East China Seas, and their intention to carry out technical exchanges on fishery matters.

The last private agreement between Japan and Communist China was entered into in 1955 and was renewed annually until 1958 when it expired as a result of the breakdown in Japan-Communist China trade relations. The 1955 agreement established six fishing zones off the Chinese mainland, limited the entry into those zones of Communist Chinese and Japanese fishing vessels, and provided for emergency ports of call.

Japan (Contd.):

Although the memorandum is little more than a statement of intentions, it has significance in that it represents the establishment of one more in the growing number of contacts between the Japanese and Communist Chinese. (United States Embassy, Tokyo, February 21, 1963.)

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MIDWATER TRAWLING FOR SHRIMP SHOWS PROMISE:

Excellent results have been reported from a new midwater trawl fishery for shrimp. Large quantities of shrimp are now caught in the East China, Yellow, and Bering Seas, and the North Pacific by both pair trawlers and side trawlers. These vessels tow large polyethylene knotless nets which have a headline spread of up to 200 feet (250 feet at the footrope) for the pair trawlers, and up to 160 feet headline spread for an 850 hp., side trawler. Each pair trawler has an engine of about 350 hp.

This new fishery, in which the shrimp are taken 10-15 fathoms from the bottom, has been developed entirely through the use of the highly sensitive 200 kilocycle echo sounder, which is very efficient up to depths of 100 fathoms. Over half the echo sounders sold in Japan during the past 12 months have been of this high frequency type, although some firms are offering sets which are adaptable from 200 to 50 kilocycles. Many of the vessels which are fishing for shrimp are fitted with a "Net-sonde" telemetering device attached to the mouth of the trawl.

The doors in use with the big four-seam nets are high curved boards which are claimed to offer less resistance. (World Fishing, January 1963.)

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NEW STERN-TRAWLER TRAINING SHIP:

The new Japanese training ship Oshoro Maru, built for Hokkaido University by an Osaka shipyard, has the features of a modern stern-trawler. The 1,150-ton vessel can also be used to train fishermen in drift-net and long-line fishing. In recent years, the Japanese have built a number of training ships in order to give their fishermen a sound background in the use of modern navigational and fishing equipment. The Oshoro Maru has accommodations for 60 trainee-cadets and 9 fishery instructors, as well as a normal complement of 12 officers and 27 crewmen. The extra accommodations were provided by limiting the fish-holding space of the vessel to 46 cubic meters (60.1 cubic yards).

The main dimensions of the vessel are: length between perpendiculars 60.5 meters (198.4 feet); breadth 11.0 meters (36.1 feet); molded depth 5.4 meters (17.7 feet). It is powered by a Diesel engine of 2,000 h.p. at 260 r.p.m., giving a maximum speed of 14.5 knots and a cruising speed of 12.5 knots. Fuel-oil tanks have a capacity of 327 cubic meters (427.7 cubic yards). Fresh-water tanks have a capacity of 246 cubic meters (321.7 cubic yards). The fish hold is refrigerated by two 20 h.p. Freon units.

The vessel's oceanographic equipment includes three powerful sounding machines and a geomagnetic electro-kinetograph. (Fishing News, December 21, 1962.)

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ANTARCTIC WHALING FLEETS ATTAIN ONE-THIRD OF QUOTA:

During the 1962/63 whaling season the Japanese had seven fleets operating in the Antarctic. The 7 fleets, which are owned by 3 Japanese fishing companies, were allotted 6,111 blue-whale units (873 units for each firm) at the July 1962 meeting of the International Whaling Commission. A blue-whale unit equals 1 blue whale, or 2 fin whales, or $2\frac{1}{2}$ humpback whales, or 6 sei whales.

At the July 1962 International Whaling Commission meeting, a basic quota of 15,000 blue whale units was set as the allowable catch for the five Antarctic whaling nations. Originally, Japan was allocated 33 percent of the over-all quota, but the quota was increased to 41 percent upon the acquisition of 2 whaling fleets, one each from the United Kingdom and Norway. Calculated on this basis Japan's 1962/63 allotment of the over-all quota was 6,150 blue-whale units. It was agreed, however, that The Netherlands would receive, in addition to its 6 percent of the 15,000 units additional bonus units from the Japan, United Kingdom, and Norway quota. In order to meet this obligation Japan set a quota of 6,111 units for its Antarctic fleet.

From the beginning of the baleen whaling season on December 12, 1962, to January 26,

Japan (Contd.):

1963, the Japanese fleet had captured 4,478 baleen whales (4,443 finbacks, 138 seis and 7 humpbacks). In terms of blue whale units the fleet had taken about 36 percent of its allocated quota of 6,111 units on January 26.

The fleet had taken 1,629 sperm whales prior to January 26 this year. The catch of this species is not restricted by the International Whaling Commission. (Fisheries Attache, United States Embassy, Tokyo, February 1, 1963.)

Republic of Korea

MODERN FISHING VESSELS TO BE OBTAINED FROM ITALIAN-FRENCH GROUP:

On January 21, 1963, six Italian and two French businessmen signed a contract with the Government of the Republic of Korea to supply Korea with 159 modern fishing boats valued at approximately US$58 million. The Italian group will provide about $26 million of equipment including marine motors and other machinery. The French firm will supply equipment valued at about $32 million, including vessel hulls and fishing equipment. (United States Embassy, Seoul, January 26, 1963.)

Morocco

FISHERY PRODUCTS INCLUDED IN TRADE AGREEMENTS:

During 1962, the Government of Morocco concluded or extended bilateral trade agreements with a number of countries. Many of the agreements included provisions for trade in such fishery products as fish meal, canned sardines, fresh fish, frozen sardines, oysters, and other fishery products. Under the agreements, Morocco will export fishery products to 18 countries, and will import fishery products from 6 countries. (United States Embassy, Rabat, December 19, 1962.)

Netherlands

AGREEMENTS ON ANTARCTIC WHALING SUBMITTED TO PARLIAMENT:

On January 13, 1963, The Netherlands Government submitted the text of two whaling agreements to Parliament for ratification. These agreements, signed on June 6, 1962, provide for an allocation among the signatory countries of the maximum number of blue whale units to be caught by each in Antarctic waters. The Netherlands is allocated 6 percent of the total (15,000 blue whale units) and may under certain conditions be able to catch more. A public debate on these agreements in the Second Chamber has been requested by the Socialist Party.

The Netherlands Whaling Company has announced that the 1962/1963 season got off to a relatively good start, with whale oil production so far running considerably ahead of 1961-62. (United States Embassy, The Hague, January 26, 1963.)

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TRAWLERS TO ENTER DISTANT-WATER FISHERIES:

Under a new project supported by the Netherlands Government, about 10 Dutch trawlers will soon be fishing off Iceland, the Lofoten Islands, and in the White Sea. The trawlers, which will fish for cod, whiting, haddock, and other fish in those areas, will receive a Government subsidy of one million guilders (US$278,000) annually for the next three years.

The first Dutch trawler to take part in the project left early in February to fish off Iceland. One fishing firm in Ijmuiden is reportedly planning to purchase 6 large stern trawlers from Poland, which it intends to use off Iceland, in the Bering Sea, and possibly off Newfoundland.

The entire project is meeting opposition from Dutch fishermen, however. The three principal fishermen's unions have advised their members not to sign on trawlers sailing to those new areas. (U.S. Embassy, The Hague, February 9, 1963.)

New Hebrides

EXPORTS OF FROZEN FISH, 1958-1962, AND FISHERY TRENDS, EARLY 1963:

The New Hebrides in the South Pacific gained an important new export industry in 1958 when a fish freezing plant was established in Palekula near Santo. Since then, their exports of frozen fish (mainly tuna) have been: 1958--3,509 metric tons; 1959--3,710 tons; 1960--4,133 tons; 1961--3,675 tons; and 1962--4,289 tons. The value of their 1962 frozen fish exports was estimated at £470,000 (US$1,316,000). The United States received about 84 percent of the total exports of frozen fish from the New Hebrides during 1958-1962, with most of the remainder going to Japan and France.

In 1963, an estimated 7,250 tons of frozen fish will be produced at the Palekula plant which is being expanded. In addition, the wooden wharf at the plant will be replaced with a concrete dock where 450-ton vessels can land. The plant is operated by a joint Japanese-United States-Australian company.

The base employs 40 Japanese and 75 local workers ashore. It is served by 11 Japanese long-liners manned by crews of 23 to 25 men. The vessels usually spend 25 days at sea. Their catch averages about 55 percent albacore, 15 percent yellowfin, and 5 percent bigeyed tuna. The remainder of the catch consists mostly of black marlin, swordfish, and sharks.

The Japanese vessels in the New Hebrides fish their long lines to a depth of 200 meters (656 feet). Baited hooks are set on each long line at intervals of 20 meters (65.6 feet). On the average, only $3\frac{1}{2}$ percent of the baited hooks can be expected to take fish, according to an Australian investor in the Palekula base. He said that the efficiency of United States tuna vessels using purse seines and power blocks had reduced United States tuna prices and made it more difficult for his company to compete in the United States market.

The Government of the New Hebrides imposes a general 3 percent export tax on frozen fish, and an additional 3 percent levy on shipments to France as a charge for a certificate of origin. The New Hebrides authorities have waived the $17\frac{1}{2}$ percent import duty on equipment brought in to operate the shore base at Palekula. Negotiations were going on in early 1963 to reduce the import duty on long lines and other fishing gear used in the fishing operation. (United States Consulate, Suva, February 24, 1963.)

Note: See Commercial Fisheries Review, June 1960 p. 57.

New Zealand

FIRM CONSIDERS BUILDING FREEZE-DRYING PLANT FOR FISH:

An Invercargill, New Zealand, firm which owns what is claimed to be the only commercial size accelerated freeze-drying plant for meat in the Southern Hemisphere, is considering building a plant at Timaru to freeze-dry fish.

The plant's managing director claims to have made some highly successful experiments in the freeze-drying of minced fish, oysters, and crayfish. He also claimed that potential overseas markets exist for his products.

Plans by the New Zealand firm include the offering in 3 or 4 years, of an "Accelerated Freeze-Drying Plant" suitable for installation aboard vessels to process fish at sea. Such installations would enable vessels to land much larger catches without the need of refrigeration.

Accelerated freeze-drying of food (cooked or uncooked) is a method of freezing and then drying in a vacuum. The frozen moisture is converted directly to water vapor and evapotated as such, bypassing the liquid stage. It is claimed that this method of food preservation has the least adverse effect on flavor, texture, nutritive value, appearance, and color.

Shrimp have been preserved by freeze-drying in the United States for several years. (Australian Newsletter, December 1962.)

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NEW FISH EXPORTING COMPANY PLANNED IN AUCKLAND:

A new fishing company working exclusively for the export market will be organized in Auckland, New Zealand, with a paid up capital of £125,000 (US$350,000), according to plans announced in late 1962. The proposed new company hopes to have 4 large trawlers and 2 medium-sized vessels operating with-

New Zealand (Contd.):

in 2 years. Under the organization plan, the public will be offered 154,500 shares at 10s. ($1.40) par in the new firm. The remaining 95,500 shares will be issued to shareholders in a frozen food distributing firm which will become a wholly-owned subsidiary.

The distributing firm that will become a subsidiary has shipped New Zealand fish by air to the Sydney Fish Market in Australia when prices have been attractive. The firm also ships sharks and shark livers to Australia and Malaya. In late 1962, the distributing firm acquired its own trawler, the 60-foot Southern Cross Stars. On its first trip for its new owner, the vessel returned with 200 sharks. (Fish Trades Review, Australia, December 1962.)

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SPINY LOBSTERS EXPORTED TO FRANCE:

In late 1962, a shipment of about 15 metric tons of frozen cooked spiny lobsters valued at over £5,000 (US$14,000) was exported to France by three fishery companies in Dunedin, New Zealand, working in association with an Australian exporter. The shipment was aimed at expanding the market for New Zealand spiny lobsters to European countries, particularly France, Germany, and Switzerland.

Unlike the considerable quantity of New Zealand spiny lobsters exported to the United States in the form of raw frozen tails, the French shipment consisted of whole cooked spiny lobsters. They were cooked in boiling water for about 10 minutes and then cooled in cold water. After cooling, they were drained of surplus water and frozen in polyethylene bags. (Fishing News, December 21, 1962.)

Nicaragua

LICENSE AND TAX PROVISIONS OF FISHERIES LAW:

A basic law designed to regulate the fishing industry was promulgated by Nicaragua under Decree 346 effective March 6, 1961. The law pertains to all fishing in the marine, continental, and insular waters that cover the continental shelf and underwater zones belonging to Nicaragua; fishing in international waters by vessels of Nicaraguan registry and vessels operating under Nicaraguan license; and fishing in lakes, bays, and rivers that are public property.

Following are important license and tax provisions under the law:

Commercial fishing licenses are granted by the Nicaraguan Ministry of Economy for a period not exceeding 20 years, although they may be extended for another 10 years. Only those enterprises which have constructed or plan to construct onshore installations in Nicaraguan territory will be considered for licenses. A plant must be of sufficient size and capacity to produce fishery products for the export market. This qualification will be determined by the Minister of Economy. If a plant is not constructed, the license will be canceled. Floating processing plants are prohibited from operating in Nicaraguan waters, but enterprises that produce exclusively for the Nicaraguan market are exempt from this provision of the law.

Requests for fishing licenses must contain detailed information on plans and plant capacity, amount and value of materials and machinery needed in construction, size and type of building to be used for the plant and related housing, method of financing, and vessels and fishing equipment to be used.

Prior to applying for a commercial fishing license, the requesting organization must make a deposit to the order of the Nicaraguan Treasury in the Banco Central de Nicaragua ranging from US$500 to $1,000. The amount of the deposit will be determined in each case by the Director General of Natural Resources. In addition, guarantee compliance with the obligations set forth in the license provided under the Natural Resource Law, a bond ranging from $1,000 to $10,000, will be required. The amount of the bond will depend on the importance and value of the enterprise to be licensed.

Fishing enterprises are taxed on the basis of the fishing capacity of the vessels belonging to the enterprise. Vessels up to 16 feet long and 4 feet wide are taxed $10 annually. Larger vessels pay an additional annual fee of $1 for each foot of length over 16 feet. Fishing enterprises are also subject to a Nicaraguan profits tax.

Holders of commercial fishing licenses are exempt from the payment of import duties and consular fees on all materials imported

Nicaragua (Contd.):

by them for fishing or for the improvement of their business. But each exemption must be requested individually from the Nicaraguan Customs office. Holders of commercial licenses are subject only to those taxes enumerated in the law. ("Investment in Nicaragua," Overseas Business Reports, December 1962, Bureau of International Commerce, U. S. Department of Commerce.)

Note: See Commercial Fisheries Review, June 1961 p. 76.

Norway

FISHERIES TRENDS, JANUARY 1963:

Whaling: In the first 32 days of the 1962/1963 whaling season, Norway's 4 Antarctic whaling expeditions processed a total of 76,800 barrels of oil, including 47,600 barrels of whale oil and 29,200 barrels of sperm oil. A year ago, Norway operated 7 Antarctic whaling fleets, which produced

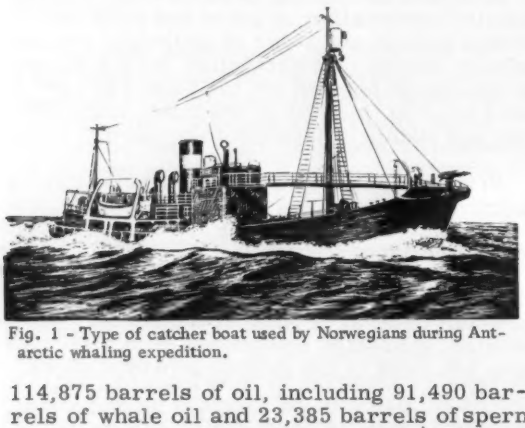

Fig. 1 - Type of catcher boat used by Norwegians during Antarctic whaling expedition.

114,875 barrels of oil, including 91,490 barrels of whale oil and 23,385 barrels of sperm oil, in the first 33 days of the 1961/1962 Antarctic season. Only four factoryships are active this pelagic whaling season as compared with seven in the 1961/62 season. Norway's quota of 32 percent of the total international quota of 15,000 blue whale units was reduced to 28 percent with the sale of the factoryship Kosmos III to Japan.

Lofoten Cod Fishery: The temporary ban against purse-seining in this fishery of North Norway will be extended through 1963.

Fisheries Economic Study: Thirty European fisheries researchers participated in an international seminar on fisheries economics, held January 28-February 22, 1963, in Bergen, Norway, under auspices of the Norwegian School of Economics and Business Administration. (News of Norway, February 7, 1963 and United States Embassy, Oslo, February 12, 1963.)

Fig. 2 - Sorting the catch--Lofoten cod fishery.

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FISH-PROCESSING COMBINE ESTABLISHES DISTRIBUTION BASE IN THE NETHERLANDS:

A Norwegian combine of 160 fish-processing plants with its own fishing fleet has announced that it will establish a distribution center for frozen fish in Amsterdam, The Netherlands. This center, which will start operations in 1964, will supply all of the Norwegian sales organizations in Western Europe. The combine has similar distribution centers in the United States and Australia. (United States Embassy, The Hague, January 26, 1963.)

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FIRST STERN-FISHING FACTORY TRAWLER LAUNCHED:

Another step forward in the modernization of Norway's distant-water fishing fleet was taken when the Longva, the first stern-fishing factory trawler to be built in Norway, was handed over to her owners.

The 1,092 gross ton vessel is equipped to produce frozen fillets, animal food, salt cod, and cod liver oil. She has the following main dimensions: length over-all 208 feet (175 feet between perpendiculars), breadth moulded 32 feet 10 inches, depth to main deck 16 feet 1 inch, and depth to shelterdeck 23 feet 8 inches. The vessel is smaller than the British and other vessels upon which she was modelled and her layout is extremely compact.

Norway (Contd.):

Everything seems to have been done to provide the largest possible storage capacity, with the result that the vessel will be able to land about 400 tons of frozen fishery products per trip.

One of the methods employed to obtain that storage capacity has been the positioning of the engineroom at the extreme aft end of the ship. Increased crew accommodation space has been obtained by fitting a whaleback--an unusual feature on a stern trawler. The position of the engineroom has been a contributing factor to the layout of the bridge superstructure. Two extensions to the bridge enclose the forepart of the trawl deck and house the 2 lifeboats and engine exhausts.

The vessel's main and aft masts are a quadpod and bipod respectively, giving the skipper an uninterrupted view of the trawl deck from the bridge.

The main purpose of the vessel will be to produce frozen packaged fish. The owner chose to produce animal food instead of fish meal, as there is a considerable saving in space in not installing a fish meal plant, while the resulting byproduct will meet with a stable market.

The factory deck procedure follows usual lines. After manual bleeding and cleaning, the fish are washed mechanically and passed to the two-line filleting machinery. This consists of 2 German made heading and filleting machines for fish of 50-120 centimeters (about 20-47 inches) in length and for fish of 40-70 centimeters (about 16-28 inches). These operate in conjunction with two skinning machines at a rate of 18-22 and 35-40 fish per minute, respectively. The fish are then taken on conveyor belts to three packing and weighing tables, and the loaded cartons then placed on trays for freezing in either a horizontal contact freezer or an elevator-type cold air freezer.

The Longva is powered by a 300 r.p.m., 1,500 hp. Diesel engine coupled to a controllable pitch propeller. Three auxiliary Diesels drive three 180 k.v. auxiliaries. A hydraulic trawl winch is part of the deck equipment.

Navigational aids include an echo sounder and a fischlupe, plus a radio, two radars, ASDIC, gyro, autopilot, and electronic log. (World Fishing, February 1963.)

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LOFOTEN COD FISHERY ATTRACTS FEWER VESSELS IN EARLY 1963:

Only about 900 fishing vessels were on North Norway's Lofoten cod banks when the fishery opened early in 1963. A total of 2,836 vessels and 9,681 men took part in the fishery in 1962, according to a final report. In good seasons in the past, 30,000 men participated in the fishery. (News of Norway, February 14, 1963.)

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PROPOSED INCREASE IN FISHING VESSEL CONDEMNATION SUBSIDY:

The Norwegian Government has proposed a supplementary appropriation of Kr. 5 million ($700,000) to subsidize condemnation of outmoded fishing vessels. It has also proposed that the Fishermen's Bank be authorized to increase this year's condemnation subsidy grants by Kr. 2 million ($280,000). This would raise to Kr. 7 million ($980,000) the limit on those grants. (News of Norway, February 21, 1963.)

Note: Norwegian kroner 7.15 equals US$1.00.

Pakistan

KARACHI FISH HARBOR AND MARKET:

The Karachi fish harbor and market was opened on October 2, 1959. Built by the Government of Pakistan at an estimated cost of Rs. 15 million (US$3.1 million), it has become an important fisheries center which has speeded the growth of West Pakistan's fisheries. The United States provided equipment valued at Rs. 2.5 million ($0.5 million) and technical assistance to help build the harbor.

Karachi harbor was developed by building a jetty (1,740 feet long) and dredging a channel and turning basin, so fishing vessels could land directly at the market. Formerly, fishermen had to unload their catch on the open beach and then carry it miles to market by camel or donkey cart.

Buildings housing the Karachi fish market were built on 50-foot piles. The market complex now includes a wholesale fresh and dried

Pakistan (Contd.):

Fig. 1 - Dried fish ready for auction in the Karachi fish market.

fish market, cold storage and ice-making facilities, curing sheds, a workshop and slipway, a marine fisheries laboratory, net working sheds, offices and stores for the fishermen's cooperative society, rest rooms, a seafood restaurant and fishermen's cafe. It also includes housing for the principal staff of the market who must begin work at 3 a.m.

A certain amount of space at the market was set aside for private industry. So far, six fishery firms have located at the market with processing equipment to freeze, can, and dry fish, as well as extract shark liver oil.

A Government sponsored fishermen's cooperative society is the agent for the wholesale distribution of fish at the market. Fish are actually sold by 24 auctioneers, known locally as "mole holders," who are licensed by the cooperative. A modest fee is charged for the service, half of which is paid to the cooperative and half to the auctioneers. The auctioning system under the cooperative protects the fishermen from any squeeze on prices by middlemen and provides the cooperative with an income of Rs. one million (about $0.2 million) a year, according to the Deputy Director of the Central Fisheries Department of Pakistan. Describing the disposition of

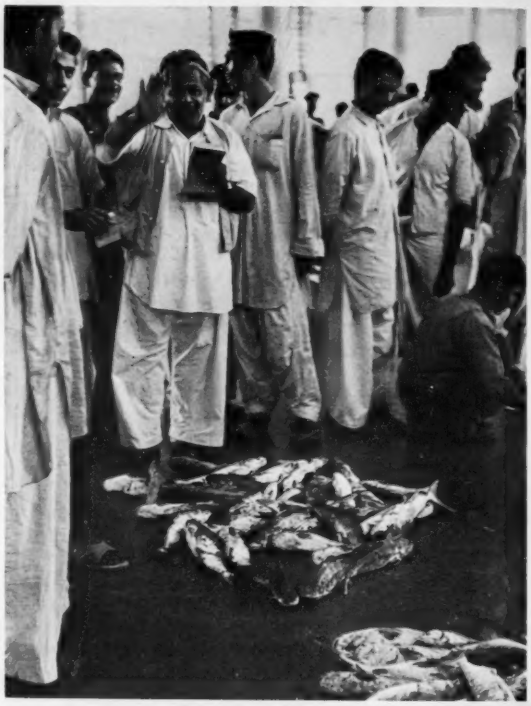

Fig. 2 - Fresh fish being auctioned in the Karachi market. The man with the document who is holding up his hand is one of the licensed auctioneers.

that income, he said, "Usually, some 5 to 15 percent is paid out by the society to the fishermen (about 1,600) all of whom are members of the cooperative. The rest of the money is used for the welfare of the fishermen, such as financing easy credit for the purchase of boats, engines, gear, and equipment; for building schools; bringing fresh water to the villages, looking after families in distress through death and injury; caring for the old and infirm; and providing scholarships for children."

In West Pakistan, fishery landings and exports, as well as fishermen's earnings have increased substantially since the market opened. A stable market for fish and easy credit terms have enabled some fishermen

Pakistan (Contd.):

to mechanize their vessels. In addition, new vessels are being built in boat yards on the open beach adjoining the new Karachi harbor. A Food and Agriculture Organization (FAO) representative reported that over 30 new

Fig. 3 - A Karachi fish buyer takes a closer look at the fish he has bid for successfully.

Fig. 4 - Shrimp sorting and handling at the Karachi market. Shrimp are a valuable part of Karachi's fishery landings.

Fig. 5 - Shrimp being processed in Karachi for freezing and packing for export.

mechanized fishing vessels 40 to 50 feet long, were being hand-constructed in those yards in early 1963. West Pakistan's fishing fleet of 5,000 vessels now includes 431 mechanized vessels. The Government has aided mechanization by exempting engines, fishing gear, and other equipment from certain taxes.

Fig. 6 - Mechanized fishing vessels alongside the landing dock of the Karachi market.

The Deputy Director of the Central Fisheries Department said, "Mechanization of the boats and the use of nylon nets and other improved gear has had a big impact. Under sail alone, boats would take perhaps 8 hours to reach the fishing grounds and 8 to return, leaving only a third of the 24 hours for fish-

Pakistan (Contd.):

ing. Powered boats do the voyage in an hour each way and can fish for 22 hours a day.

Fig. 7 - Sail-powered Pakistani fishing vessels in foreground.

"Nylon nets," he continued, "are not only finer, more easily handled, and last 4 to 5 years against the 6 months of the local cotton nets, but also catch more fish."

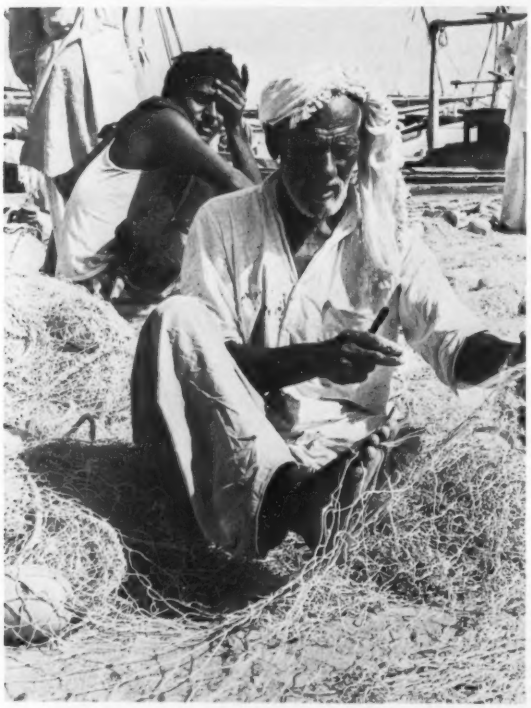

Fig. 8 - A veteran fishermen repairing his net.

But he pointed out that, although impressive progress has been made, there was still a lot of room for improvement. Less than 10 percent of West Pakistan's fishing fleet has been mechanized. Government plans to aid the fisheries include a project to bring roads and electric power to the Karachi boat building area. This would enable the builders to use power tools and machinery and cut their vessel construction time from 6 to 2 months.

Fig. 9 - Boat building in an open-beach yard near the Karachi market.

The Karachi boat yards hope to attract foreign orders. Their vessels are built of durable teak imported tax free from Burma. The cost of building a vessel in West Pakistan is one-half to one-third cheaper than in most countries. The Deputy Director said that FAO naval architects have carried out exhaustive tank tests on the vessel design used in Karachi and concluded that it cannot be improved.

Fig. 10 - A new fishing vessel ready for launching in Karachi. It will be pushed, hauled, and lifted to the sea by about 100 men.

Pakistan (Contd.):

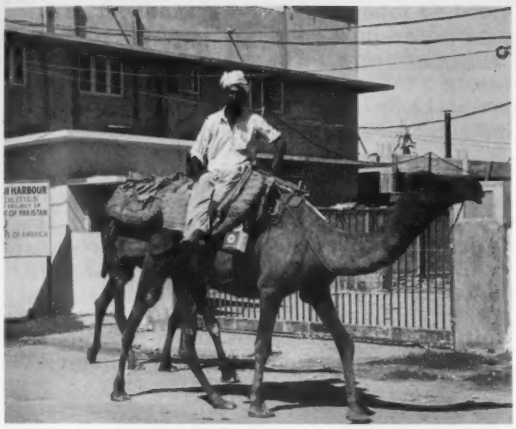

Fig. 11 - The old and the new in Karachi.

The Government also hopes to expand the domestic market for fish. At present, most of West Pakistan's fisheries catch is exported. Frozen shrimp and spiny lobster are shipped to the United States, canned shrimp is sold to the United Kingdom, and dried fish is marketed in India and Ceylon.

The Deputy Director said, "The main drawback to developing the domestic market has been the lack of distribution facilities. If we can organize quick distribution of fresh fish, I think we can develop the market, but to do this needs a well organized 'eat-more-fish' campaign, using all modern methods of education and persuasion. We're planning such a campaign for the future which will include a special drive to persuade children to eat more fish, and will demonstrate the tastiness of fish through the use of fleets of mobile fish fryers." (Features Section, Food and Agriculture Organization of the United Nations, February 10, 1963.)

Notes: (1) Pakistan rupee 4.782 equals US$1.00.
(2) See Commercial Fisheries Review, January 1960 p. 82.

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NEW FIRM PLANS TO PACK AND EXPORT FROZEN FISHERY PRODUCTS:

A firm in Karachi interested in exporting frozen fishery products was going ahead with plans about the end of 1962, to install the latest quick-freezing and processing machinery. The firm will have the capacity to pack and freeze 3,600 metric tons of shrimp or 4,800 tons of fish fillets a year, and is reported to have made an agreement with a leading United States importer of fishery products assuring the sale of its entire output. The Karachi firm expects to earn about US$5.6 million in foreign exchange annually. It has an authorized capital of about $1.1 million, with shares offered for public subscription. It has received the necessary licenses from the Government of Pakistan to import needed equipment. (Foreign Trade, Ottawa, December 1, 1962.)

Panama

SPINY LOBSTER EXPLORATORY FISHING PROJECT:

M/V "Pelican" Cruise 8 (December 6-20, 1962): A one-year exploratory survey for spiny lobsters along the Caribbean and Pacific coasts of Panama was started on August 27, 1962, when the M/V Pelican, a chartered commercial fishing vessel, arrived in Colon, Panama. The survey is being conducted by the U. S. Bureau of Commercial Fisheries through an interagency agreement with the U. S. Agency for International Development (AID) Mission to Panama as an Alliance for Progress program.

M/V Pelican, commercial fishing vessel under charter to U. S. Bureau of Commercial Fisheries for exploratory work off Panama.

The Pelican, which has been outfitted with specialized equipment for exploratory spiny lobster fishing, is a 72-foot steel hull shrimp vessel capable of 21 days of continuous operation, with accommodations for a 10-man crew and staff. A 17-foot outboard-powered skiff is available for shoal-water work.

During cruise 8, exploratory lobster fishing was extended along the southeastern Pacific coast of Panama and 97 trap stations were completed. A total of 568 traps was

Panama (Contd.):

fished for intervals of 1, 2, and 3 days, for a final fishing effort of 1,049 trap days. The highest catch rates were obtained in and near Santelmo Bay, Del Rey Island, where a 2-day 77-trap set during the dark-moon period yielded 33 spiny lobsters (Panulirus gracilis). During the full-moon period, a 3-day set of 69 traps yielded only 24 spiny lobsters. Spiny lobsters caught in the Del Rey Island area averaged 20 ounces in whole weight. The sex ratio was 1.3 male to 1.0 female.

Other areas fished during the cruise were San Jose Island, San Miguel Gulf, and Pinas Bay. Only one lobster was caught in an 84-trap set at San Jose Island. Thirty-six traps set in San Miguel Gulf produced no lobsters. Strong current conditions in that area complicated fishing trials. The Pinas Bay area produced 15 spiny lobsters in a 140-trap set.

The commercial lobster traps used during the cruise were made of wood slats, wire, and woven reed. The over-all catch rate (in number of lobsters per trap per day) of wood slat traps was twice as high as that for reed traps, and three times greater than the catch rate of wire traps.

Seven bottom trawling stations were sampled with a 40-foot shrimp trawl. Two drags near the trapping area at Del Rey Island caught 15 rock lobsters (China lobsters, Family Scyllaridae), but no spiny lobsters. The other drags were made in the Pinas Bay area and caught no spiny lobsters.

M/V "Pelican" Cruise 9 (January 21 to February 9, 1963): Explorations along the Caribbean coast of Panama were attempted during the first week of cruise 9, but severe sea conditions interferred with fishing operations. The Pelican crossed the Panama Canal on January 30, and Pacific explorations were continued in the Chiriqui Gulf around Parida, Bellanos, and Berracos Islands. Eighty trapping stations were sampled, using traps of wood slat, wire, and reed construction. A total of 477 individual sets were made with 1 to 3 traps fished at each set for a total effort of 823 trap days.

The traps caught a total of 148 spiny lobsters. The wood slat traps and the reed traps produced at about twice the catch rate (.2 lobster per trap day) as did the wire traps (.1 lobster per trap day). The highest catch rate occurred on a 57-trap 3-day set which yielded 45 lobsters. The next highest rate was obtained on a 94-trap 2-day set producing 39 spiny lobsters. The whole weight of the lobsters averaged 21 ounces (males 22.7 and females 13.2). The sex ratio was 5 males to 1 female.

Bait used in the traps included shark and sawfish meat and trawl scrap. Crushed conchs were also used as an experimental bait. Bait trawling on a narrow strip of mud bottom between Bellanos and Parida Islands in 5 to 10 fathoms yielded 3 rock lobsters.

Initial trials with a 60-fathom nylon tangle net were unsuccessful in catching lobsters.

Fishing in the Chiriqui Gulf was conducted during the half- to full-moon period. Coverage of the area during the dark-moon phase was planned during Pelican cruise 10, which began February 20, 1963.

Note: See Commercial Fisheries Review, January 1963 p. 109.

Peru

FISH-MEAL INDUSTRY CONTINUES TO EXPAND:

The anchoveta fishing season is at its height each year during a 6-8 month period beginning about October, and Peruvian fish-meal plants operated at full capacity in the fourth quarter of 1962. At times, plants had to refuse to buy fish from independent vessels because they could not process it with available equipment. Peru's total 1962 fish-meal production was 1,120,796 metric tons, according to data compiled by the National Fisheries Society, up 33 percent from the 1961 production of 839,800 tons reported by the Ministry of Agriculture. Many existing plants are doubling their facilities rapidly and numerous new plants will be coming into production within the next few months. With the increased capacity, another million tons could be added annually to Peru's fish-meal production by 1964. But one limiting factor is the availability of fishing vessels. Although local construction of fishing craft is a booming industry and some prospective buyers are even seeking vessels in other countries, the scarcity of fishing vessels is expected to restrict the increase in production. A conservative forecast of Peru's 1963 fish-meal production is 1,350,000 to 1,400,000 tons.

Peru (Contd.):

Total Peruvian fish-meal exports for 1962 are expected to be close to 1.1 million tons with a value of about $110 million, a substantial increase over the 1961 fish-meal exports of about 708,000 tons valued at $49.2 million.

In 1962, fish-meal prices were steady at about US$100 per metric ton f.o.b. Peruvian ports. Some spot sales were made in November and December 1962 at $109 f.o.b. Peruvian ports. (United States Embassy, Lima, January 24, 1963.)

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NEW TAXES INCREASE FISH-MEAL PRODUCTION COSTS:

It is estimated that new taxes levied by Peru will increase fish-meal production costs by about US$10.00 per metric ton. A tax of about $1.05 per metric ton on anchoveta used for industrial purposes was imposed by Government Decree No. 14265 effective the end of December 1962, according to the Fish Meal Exporters Organization. At a ratio of 5.6 tons of anchoveta to 1 ton of fish meal, the tax adds about $5.90 to the cost of producing a ton of fish meal. In addition, a new tax has been imposed on fuel oil used in factories or for transportation, and taxes on income and profits have been increased. The fish-meal industry and other industries are protesting the taxes. A reduction of the taxes is hoped for but cancellation of them is not expected.

So far, there have been no reports of an increase in the price of Peruvian fish meal handled by the Consorcio Pesquero del Peru S. A. (Fisheries Consortium of Peru). The Consortium is the marketing agency for about 80 percent of Peru's fish-meal exports. In early January 1963, the Consortium actually dropped its prices slightly in London. Although it is believed that a substantial part of Peru's 1963 fish-meal production has been sold, the pressure of unsold stocks in the world market is influencing fish-meal prices. In spite of the situation, some Peruvian producers who do not belong to the Consortium have increased their fish-meal prices by $2.50 to $3.00 per ton. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, January 16, 1963.)

Portugal

TREND TOWARDS EXPANSION OF TERRITORIAL WATERS AFFECTS FISHERIES:

The following is a translation of an editorial published in the Portuguese periodical, Jornal de Pescador, February 1963:

It is public knowledge that fishing is being intensified throughout the world in view of the increasing consumption demand.

Studies are constantly being made, fishing methods improved, vessels developed both for greater speed and improved storage facilities, and large sums are being spent on such improvements as training of fishermen and oceanographic research.

One grave problem, however, arises which impedes profitable fishing. It is the problem of territorial waters which, as far as we Portuguese are concerned, affects us considerably. As concerns cod fishing, but more especially trawl fishing, our fleets encounter increasing difficulties every day. In fact, the countries in whose waters our vessels have traditionally operated are progressively increasing the limits of their territorial waters thus forcing us either to seek more distant fishing grounds, which, obviously prejudices our activities, or to diminish substantially the volume of our catches with ruinous results and a decrease in domestic supply.

It would appear that this problem should be carefully studied by our authorities since it is of the greatest importance to the national economy.

We are even tempted to think that the only favorable solution for the Portuguese would be to attempt separate arrangements with several countries whose maritime areas are included in our fishing activities.

How these arrangements are to be achieved is a matter for authorities at a higher level. We do know, however, that other countries have accomplished such arrangements either by mutual concessions or by means of paying for a fishing license or making indemnization payments. This procedure, of course, would be followed until such time as a more uniform and rational formula is found internationally for solution of the problem. (Translated by United States Embassy, Lisbon, February 13, 1963.)

Senegal

TUNA INDUSTRY TRENDS, DECEMBER 1962:

The French-Senegalese agreement for the November 1962 to May 1963 tuna-fishing season allows a quota of 10,000 metric tons of tuna to be canned in Senegal and exported to France under a special, duty-free provision (the French duty on imported canned tuna is 25 percent ad valorem). The 10,000-ton quota is to be filled exclusively by Senegalese and French boats. The Government of Senegal, which has no tuna vessels at present, has contracted to have 5 tuna vessels built in France for the Senegalese fleet, 2 of which should be ready to take part in next year's fishing.

The 10,000-ton tuna quota agreed to for the 1962/63 season corresponds with previous amounts allotted to Senegalese canneries--all French owned and operated. It falls far short of annual cannery capacity, estimated to to be about 30,000 tons. No effort to fill the gap is to be made, although attempts in the past were made to sell to other than the French market. The French tuna clippers will be leaving as soon as the quota has been reached, and the Senegalese, as yet, have no other means of catching tuna. It is not known whether the canneries are expressly forbidden to purchase and can tuna taken by other than French or Senegalese craft.

On December 31, 1962, a total of 61 French vessels landed 450 tons of tuna at Dakar, the largest single catch ever unloaded at that port. This raised the current season's tuna catch to about 3,300 tons. On December 7, 1962, the tuna catch for the 1962/63 season amounted to 1,100 metric tons, compared with 120 tons on the same date the previous year. But only 21 vessels participated during the 1961/62 season when 7,000 metric tons of tuna were caught. (United States Embassy, Dakar, January 15, 1963.)

Taiwan

FISHERIES PRODUCTION INCREASES AGAIN IN 1962:

Production by the Taiwan fishing industry in 1962 amounted to an estimated 327,239 metric tons, an increase of 4.7 percent over the production of 312,439 tons in 1961. Since 1958 total production of fishery products has increased 42.5 percent.

Taiwan's Fishery Production, 1958-1962

Type of Fishery	1/1962	1961	1960	1959	1958
	(Metric Tons)				
Offshore and deep-sea fisheries	113,788	106,147	85,210	76,411	61,160
Outer coastal fishery	132,525	117,405	94,856	91,240	81,720
Inner coastal fishery	32,286	31,533	30,344	32,183	38,267
Fish culture and shellfish	48,640	57,354	49,030	46,493	48,530
Total	327,239	312,439	259,140	246,327	229,677

1/Estimated.

The 1962 increase would have been larger had not fish culture production dropped as a result of the cholera epidemic. Production was also affected by depressed domestic fish prices which discouraged trawlers. By mid-January 1963, all of the 12 tuna long liners whose construction was started in December 1961 had been launched and a few will be put into service by February this year. Those vessels originally designed at 145 tons now range from 160 to 220 tons in order to permit the installation of freezing equipment.

During 1962, a Chinese fisheries firm put into service two new 550-ton tuna long-liners. Those boats are now operating in the west Indian Ocean. The firm estimates that exports in 1962 of frozen tuna amounted to 1,800 tons and expects to export about 3,400 tons in 1963. A small amount of frozen tuna and dolphin fillets were exported by independent fishing companies from Kao-hsiung during the year, and were handled by a Japanese firm. The Japanese firm has also signed a preliminary agreement with private boat owners to operate tuna boats in the waters off American Samoa. The catch will be processed by a cannery located on that island. Operations are expected to begin in July and as of February, about 15 Chinese fishing boats have been signed up. (United States Embassy, Taipei, February 1, 1963.)

Note: See Commercial Fisheries Review, March 1962 p. 55.

Turkey

TERRITORIAL WATERS AND FISHING LIMITS EXTENSION PROPOSED:

Legislation was introduced early in February this year to extend Turkish territorial waters from 3 miles to 6 miles and her fishing limits from 3 miles to 12 miles. (Fish Trades Gazette, February 9, 1963.)

U.S.S.R.

FISHERY DEVELOPMENT TRENDS, EARLY 1963:

Facilities for the Soviet fishing industry are included in the new port complex at Odessa on the Black Sea. The port has dock space for large ocean-going trawlers and even Soviet whaling vessels, including the 32,000-gross-ton mothership Sovetskaia Ukraina. Odessa also has a new fish-processing plant and a new refrigeration plant. (Various sources.)

U. S. S. R. (Contd.):

The Soviet Union was negotiating with a leading Japanese shipyard for a large number of fishing vessels when the Japanese Government indicated that the long-term credit extended to the Soviets by the shipyard was too liberal. (Press reports.)

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FISHING ACTIVITIES IN GULF OF MEXICO AREA:

Since early October 1962, Soviet trawlers have been using the port of Veracruz, Mexico, for food supplies and to provide shore leave for their crews. Seven vessels have visited Veracruz, 2 of them on 2 separate occasions.

Local residents have talked to the Soviet crews, but the Soviets have always declined to speak directly about their fishing operations. The steel vessels are equipped for side-trawling operations. However, no nets have been seen on the decks of the vessels.

It is reported that the vessels carry refrigeration equipment for preservation of the catch and processing is handled by a factoryship. The existence of such a factoryship has not been confirmed.

Mexican newspaper accounts state that one of the purposes of the trawler fleet is to establish a fisheries training facility in Cuba. However, no Cubans have been reported aboard the vessels upon their arrival at Veracruz. The vessels employ a crew of between 20-30 men, including technicians, instructors, and fishermen. The vessels measure 507 metric tons gross and 174 tons net. (United States Consulate, Veracruz, January 23, 1963.)

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LANDINGS, IMPORTS, AND EXPORTS OF FISHERY PRODUCTS, 1960-1961:

Soviet fishery landings in 1961 amounted to 3.25 million metric tons, up 6.6 percent from landings of 3.05 million tons in 1960. Bottomfish landings, which showed the greatest increase, totaled 1.04 million tons in 1961, as compared with 0.94 million tons in 1960.

In size of catch, the Soviet Union ranked fourth among the world's fishing powers in 1961, surpassed only by Japan with a catch of 6.7 million tons, Peru with 5.2 million tons, and Mainland China with 5.0 million tons (estimated).

Soviet imports of fishery products in 1961 were down 48.8 percent in quantity and 38.4 percent in value from the previous year. A decline in imports of fresh and frozen fish and dried, salted, or smoked fish was only offset partly by an increase in imports of fish oil and fats.

Soviet exports of fishery products in 1961 dropped 24.0 percent in quantity and 2.1 percent in value from the previous year. There was a decline in exports of the lower-valued dried, salted, or smoked fish and fish oil and fats. But there was an increase in exports of the higher-valued canned and prepared fish products, most of which was shipped to countries in Eastern Europe. (Food and Agriculture Organization Feature.)

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Soviet Imports and Exports of Fishery Products, 1960-1961

Item	Imports				Exports			
	1961		1960		1961		1960	
	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value
	1,000 Metric Tons	US$ 1,000	1,000 Metric Tons	US$ 1,000	1,000 Metric Tons	US$ 1,000	1,000 Metric Tons	US$ 1,000
Fish, fresh or frozen	18.7	5,117.0	58.1	13,675.0	-	-	-	-
Fish, dried, salted, or smoked	8.6	1,922.0	28.1	3,986.0	31.3	5,928.0	43.1	8,159.0
Fish products, in or not in airtight containers	1/0.1	806.0	0.1	880.0	22.3	22,004.0	18.6	18,429.0
Shellfish products, in or not in airtight containers	-	-	-	-	3.7	9,435.0	3.7	8,598.0
Fish oils and fats	28.9	7,415.0	23.6	6,228.0	17.4	4,101.0	35.4	7,282.0
Fish meals and solubles	-	-	-	-	4.9	623.0	4.0	538.0
Total imports and exports of fishery products	56.3	15,260.0	109.9	24,769.0	79.6	42,091.0	104.8	43,006.0

1/Consists of caviar from Iran.
Source: Yearbook of Fishery Statistics, 1960-61, Vol. XIII, Food and Agriculture Organization of the United Nations.

U. S. S. R. (Contd.):

OFFICIAL CLAIMS FISHING FLEET IS WORLD'S LARGEST:

In an address before a conference of workers of the fishing industry in Riga, Latvia, the Chairman of the State Fishing Committee announced that the Soviet Union's fishing fleet was the largest in the world. He said that this fact has been acknowledged by the United States and Norway which are countries with highly developed fishing industries. He claimed that the Soviets have modern vessels which can catch and process fish, whales, and other marine products over a period of 6 or more months without entering port. Moreover, the vessels are equipped with refrigeration which enables them to operate in both the equatorial Atlantic as well as in the North Atlantic, the Arctic, and Antarctic.

In the next few years, the Soviet fishing fleet is due to be supplied with modern refrigerator ships and floating factories. Most are to be of Soviet construction; however, some of the new vessels will be made under special agreements in West Germany, Denmark, Norway, and Japan. These will include whaling factoryships; fish-processing refrigerator ships; and others.

According to the Chairman, the large Soviet ocean fishing fleet enables the Soviets to catch up to 4.2 million metric tons (about 9.3 billion pounds) of fishery products at the present time. (United States Embassy, Moscow, February 1, 1963.)

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NEW FACTORYSHIP COMPLETES SEA TRIALS:

The new Soviet 17,000-ton factoryship, Vladiwostock, recently completed sea trials in waters off Norway. The vessel, which was built in Kiel, West Germany, is powered by a five-cylinder engine of 6,250 British horsepower supplied by a firm in Copenhagen, Denmark. The new factoryship is equipped with a complete fish cannery. It also has engineering workships which enable it to function as a repair ship for Soviet trawlers. Specifications of the Vladiwostock are: length 535 feet; maximum breadth 78 feet; depth 56 feet; and draft 29 feet. The vessel will have a crew of 400.

A sister ship, the Daljnij Wostock is now under construction in Kiel, West Germany. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, February 6, 1963.)

United Kingdom

COMPARATIVE TESTS MADE AT SEA WITH NEW TYPE AND CONVENTIONAL TRAWLS:

The new trawl developed under a British White Fish Authority project was tested in comparative trials with conventional trawls under normal fishing conditions in the Arctic Ocean by the Grimsby trawlers Royal Lincs and Coldstreamer. These vessels are sister ships, which was one of the conditions necessary to make the trials really comparative. The vessels sailed together from Grimsby on January 10, with 11 scientists on board. Heading the party was a scientist from the Scottish Department for Agriculture and Fisheries Marine Laboratory.

In order to minimize differences between the vessels and their crews in the results of the trials, the two trawlers were to fish in company and, as far as possible, for the same lengths of time. Both vessels carried conventional trawls and new trawls and were to fish the trawls interchangeably. The results of the hauls and all other data was to be carefully recorded.

This is the first time in the history of fishing that an effort has been made to create a fishing instrument on a scientific basis. The results of the trials could have great and lasting benefit to the whole of the British industry.

The two trawlers were to make a fishing voyage of normal length to the Barents Sea and then revert for several trips to ordinary fishing. Later they would carry out several more special testing trips. (Fish Trades Gazette, January 19, 1963.)

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MINIMUM LANDING SIZES FOR COD AND HADDOCK INCREASED:

A new Order, effective January 1, 1963, increases the minimum landing sizes permitted for cod and haddock caught in that part of the distant waters lying north of 66° N. latitude and east of the Greenwich meridian. For that area (which includes the Barents Sea and

United Kingdom (Contd.):

waters around the north Norwegian coast and Bear Island) the new minimum sizes are 34 centimeters (13.4 inches) for cod and 31 centimeters (12.2 inches) for haddock.

The new Order carries out a recommendation of the Permanent Commission of the International Fisheries Convention, 1946.

The sizes laid down for all other species in the Sea-Fishing Industry (Immature Sea-Fish) Order 1961 remain unchanged. The sizes laid down in that Order for cod and haddock continue to apply to fish of those species caught elsewhere than in the north-eastern waters.

The changes in minimum landing sizes have a bearing on the increase in the minimum size of mesh for nets in the same area, which also became effective on January 1.

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PROPOSED EXTENSION OF FAROESE FISHING LIMITS THREATENS ABERDEEN FISHING INDUSTRY:

At the Scottish port of Aberdeen, trawler owners and trawl fishermen early in February of this year, were anxiously awaiting the outcome of talks in Copenhagen on the proposed extension of the fishing limit for British trawlers off the Faroes from 6 to 12 miles.

The Faroese Prime Minister and the Minister of Finance and Fisheries were in Copenhagen to discuss with the Danish Government the islanders' demand to increase the limit.

The Secretary of Aberdeen Fishing Vessel Owners' Association, Ltd., said: "If the limit is extended off the Faroes to 12 miles it could mean that Aberdeen is finished as a major fishing port. There is no doubt about that." He added that some Aberdeen trawlers are already losing more than £7,000 (US$19,600) per year.

A forecast of the effect that the extension of the Faroese limits might have upon the Humber ports was also made by the Secretary of the Hull Trawler Officers' Guild.

He stated: "Many Faroese-owned ships land their catches at Grimsby, and I am afraid that they will not be welcomed there if British vessels have to fish further from the Faroese coast.

"If Grimsby refuses to have Faroese-owned vessels, we do not want them in Hull. We want to make that quite clear.

"For most of the year the Hull market is oversupplied, and official returns last year showed that despite heavier landings in 1962, revenue was down by between £800,000 and £1,000,000 (US$2,240,000-2,800,000).

"Why should we aggravate this depression and further undermine the economic stability of our market by allowing landings by foreigners to whom no quota import restrictions apply?

"As discharges in England by Icelanders are restricted to certain quantities in specific months of the year, they can never be regarded as a serious threat to the livelihood of our own fishermen.

"The Faroese, however, are under no landing restrictions and their fishing fleet is still growing.

"If the Faroese fishing limits are extended, Aberdeen will just about be written off as a fishing port.

"Virtually all of the vessels operating from there have been built for Faroese fishing and I don't know what they are going to do.

"An extension of the Icelandic limit was bad enough, but the Faroese threat will make the position even worse.

"So far as Grimsby is concerned, a large fleet from there fishes the Faroe grounds.

"We in Hull, specializing in larger vessels, concentrate on more distant-water fishing."

On February 8, 1963, the British Ministry of Agriculture and Fisheries called a meeting of representatives of various sections of the industry, including the British Trawlers' Federation and the Scottish Trawlers' Federation, to review the Faroese situation. (Fish Trades Gazette, February 9, 1963.)

Note: See Commercial Fisheries Review, July 1962 p. 61.

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United Kingdom (Contd.):

TRAWLERS EXPERIMENT WITH ANTIBIOTIC ICE TO PRESERVE CATCH:

Two Grimsby trawlers in February 1963 were engaged in an investigation to determine whether the use of antibiotics in ice has value in the preservation of the catch.

Experiments and research into the use of antibiotics have been carried out by the Torry Research Station of the Department of Scientific and Industrial Research in recent years following the introduction of their use in Canada, where it was found that the application of a few parts per million definitely slowed down bacterial spoilage.

Large quantities of fish are treated every year in Canada where it has been found that two antibiotics (chlortetracycline and oxytetracycline) were particularly effective.

Up to last year, however, the use of antibotics in Britain was of little more than scientific interest, for existing food regulations did not permit fish which had been treated with those substances to be sold for human consumption.

Last year the situation was changed by the passing of the Preservatives in Food Regulations which permit the use of tetracyclines on raw fish.

Before there was any real possibility of tetracyclines being employed by the British fishing industry, it had to be discovered whether or not their use under conditions of catching and distribution offered any definite advantage in improvement in the quality of the fish and whether it was an economic proposition.

In order to try and obtain the necessary information a full-scale trial, supervised by scientists from the Torry Research Station, is at present being carried out by the Grimsby trawlers Ross Renown and Northern Sea.

Each of the trawlers was supplied with 20 tons of ice treated with the two antibiotics, the ice being specially prepared by the Grimsby Ice Co. Ltd. One vessel carries one variety of antibiotic ice while the other has the second type. In addition, both ships carry their usual tonnage of normal untreated ice.

A member of the Torry Research Station is on board each trawler to obtain accurate scientific data of the progress of the experiment. The two ships will fish, as far as is practicable, in the same vicinity at the deep-water fishing grounds.

They will fish in the usual way except that the early part of the catches will be divided, half being stowed in ordinary ice and half in antibiotic ice.

When the trawlers land their catches at Grimsby, the fish will be laid out with the antibiotic ice and normal ice preserved fish side by side for comparison purposes. The fish will be displayed on the fish market so that all interests in the industry will be able to see the results and form their own judgment. (Fish Trades Gazette, February 9, 1963.)

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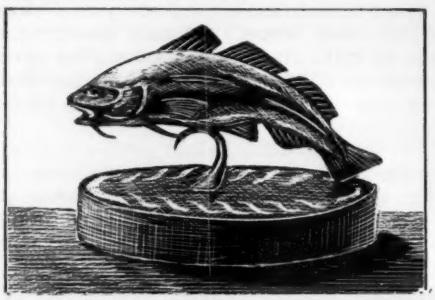
TRAWLER SOMERSET MAUGHAM WINS SILVER COD TROPHY FOR 1962:

The 1962 winner of the Silver Cod Trophy in Great Britain was the Hull trawler Somerset Maugham. The vessel's skipper, who is only 30 years old, was presented the trophy at the British Trawler's Federation annual dinner on March 7, 1963.



The British silver cod trophy to be presented annually to the distant-water trawler with the largest total catch for the year.

The winner of the trophy joined the fishing fleet in March 1961. During 1962, the vessel was at sea 338 days and landed a total of 46,560 kits (6,518,400 pounds) valued at £146,182 (US$409,130). The landings by the Somerset Maugham were the second highest since the competition began nine years ago. The record is held by the Kirkella, which landed 46,589 kits or 6,522,460 pounds in 1955. (Fish Trades Gazette, January 12, 1963.)

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United Kingdom (Contd.):

VALUE OF IMPORTED FISHERY PRODUCTS AMONG WORLD'S HIGHEST:

Only the United States pays more money for fish and fish products than the United Kingdom, according to figures gathered by the Food and Agriculture Organization (FAO). In 1961, the British spent close to US$175.4 million for 607,200 tons of fishery imports. The United States in 1961 spent about $361.4 million for 715,100 tons, an all-time world high in both quantity and value.

West Germany in 1961 actually imported slightly more fishery products (655,800 tons) than the United Kingdom, but because of differences in the types of imports, spent only about $113.8 million.

Although the cost of fishery products imports to the British in 1961 was second to that paid by the United States, it was still less than what they have been paying since 1958. In that year the British paid $190.7 million for 484,500 tons. In 1959, they paid even more--$202.2 million for 489,000 tons and in 1960, the cost was down to $189.5 million for 554,100 tons.

At the same time the United Kingdom was importing more fish and at a higher cost, her fishery exports were dropping in volume, but the value stayed about the same over the 4-5 year period.

In 1961, the United Kingdom exported 49,800 tons valued at $20.7 million. This was less than the 54,900, 61,700, and 58,800 tons she exported in the years 1958, 1959, and 1960 although her import earnings for all those years were approximately the same.

In 1948, the United Kingdom exported 96,800 tons of fishery products valued at $23.5 million.

Venezuela

BASE FOR FOREIGN FISHING VESSELS:

In a speech made on January 22, 1963, at Barcelona, the Venezuelan Minister of Agriculture noted that the Japanese tuna fleet was now fishing in the Atlantic Ocean and that they had obtained port facilities in Brazil. He then stated that he thought it would be good if Venezuela were to offer similar facilities. His reasoning was that the Japanese would need supplies, fuel, possibly other merchandise, and that the fishermen would require recreation.

He also pointed out that there are fish canneries in Cumana which are not using their available canning facilities because the sardine catch is not sufficient to keep the canneries fully occupied.

This suggests that vessels from other nations might be able to use Venezuela as a base and sell part of the catch to the canneries in Cumana. While this would require intergovernmental agreements as well as private arrangements between the fishing vessels and the canneries, there is an indication that such an arrangement is possible. (United States Consul, Puerto La Cruz, January 23, 1963.)

FLOOD FORECASTS WILL BE IMPROVED BY NEW RAIN MEASURING DEVICE

Rainfall as far as 100 miles away can be measured by a new radar device. When it is ready for operational use, the device will improve river and flood forecast substantially. From a single, convenient location, it will provide instantaneous measurements of precipitation at many points over a broad area. The measurements will be used in modern computers to prepare river and flood forecasts.

To be tested by the U. S. Weather Bureau, the "Radar precipitation integrator" converts the intensity of radar echoes at 150 points over a river basin into quantitative terms. The information can then be sent to River Forecast Centers.

The device was developed and constructed by the Stanford Research Institute. Tests of the equipment will be conducted at the Weather Bureau's Radar Research Laboratory in Norman, Okla. (Science News Letter, February 2, 1963.)

FEDERAL ACTIONS

Department of the Interior

CONTRACT AWARDED FOR THE PROCESSING AND SALE OF ALASKA SEAL SKINS:

The Secretary of the Interior announced on March 5, 1962, the award of a contract for the processing and sale of United States Government-owned fur seal skins harvested on the Pribilof Islands, Alaska.

The contract, awarded to Supara of Chicago, Ill., will locate its plant in St. Louis, Mo. The contract entered into for the period ending December 31, 1974, replaces the former contract with Fouke Fur Company of Greenville, S. C., which was terminated on December 31, 1962.

Following an invitation and prospectus issued in June 1962 for processing and selling Government-owned Alaska seal skins, 10 firms requested raw seal skins for the purpose of demonstrating their capability for processing quality-finished furs. Four firms submitted sample skins as evidence of their technical competency for male and female skins, and a fifth firm submitted a proposal for female skins only.

The Department appointed an Industry Panel of five to examine and evaluate the skins processed by those firms submitting proposals. In addition the competing skins were subjected to a series of physical and chemical tests performed by the National Bureau of Standards.

The selection of Supara was based upon the quality of the processed samples as determined by the Industry Panel and the National Bureau of Standards tests, enabling the Government to provide for the uninterrupted handling of seal skins, and assuring the luxury fur industry of the continued availability of finished seal skins that meet the high standards of quality of materials and workmanship expected by the fur industry.

The contract which has been awarded is more favorable to the Government than the previous contract in several respects. For seal skins processed and sold as dressed, dyed, machined, and finished seal skins, Supara will receive $14 per skin plus 16 percent of the average selling price, as compared with $15 per skin plus 17½ percent of the selling price under the old contract; for female seal skins processed and sold as sheared, dressed and finished seal skins, the Government will pay $18 per skin selling at $30 plus 16 percent of the average selling price in excess of $30, compared with $18.75 and 17½ percent under the terminated contract; Supara is assured of an annual net profit, before taxes, of $177,400 which is considered to be a fair and reasonable return on projected income and is subject to adjustment based upon an increase or decrease in income. Excess profits will be turned over to the Government; Supara receives no increase in annual profit regardless of volume of sales if expenses exceed 87.375 percent of Company's income, whereas the old contract contained no restriction on expenses or income; discount of 1 percent allowed buyers under old contract for cash will be discontinued, resulting in additional revenues of more than $40,000 annually to the Government; Supara will assign and transfer to the Government full and entire right in and to inventions and discoveries (except dyes); and provision is made for the Government to participate in sale of any byproducts; under the old contract the Government received no part of the contractor's income from sale of byproducts.

The new contract provides for the redetermination of price after the conclusion of the fourth auction and at five-year intervals thereafter or at any other time at the request of either party.

While the contract covers the period ending December 31, 1974, it may be terminated at any time when Supara fails, in the judgment of the Secretary of the Interior, to maintain the recognized standards of quality of materials and workmanship expected by the fur industry from past experience, except as the same may be a direct result of the condition of the raw skins as furnished by the Government.

The State of Alaska will be the principal beneficiary of the larger return the Government will receive from the processing and selling of seal skins since the State receives 70 percent of the net proceeds.

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NEW SCIENCE ADVISOR TO SECRETARY APPOINTED:

Dr. John C. Calhoun, Jr., of College Station, Texas, has been appointed Science Adviser to the Secretary of the Interior, Secretary Stewart L. Udall, announced on February 25, 1963.

Dr. John C. Calhoun, Jr.

Dr. Calhoun, who is on a year's leave of absence from his duties as vice chancellor for development of the Texas A. and M. College System, will serve as the principal science adviser to the Secretary and will coordinate scientific programs of the Department of the Interior. His appointment will be effective May 1, 1963. He replaces Dr. Roger Revelle of the Scripps Institution of Oceanography, who is returning to private research.

Born in Betual, Pa., on March 21, 1917, Dr. Calhoun received his B. S., M. S., and Ph. D. degrees in petroleum and natural gas engineering from Pennsylvania State University, completing the latter in 1946.

He joined the Texas A. and M. College System in 1955 and served as director of the Texas Engineering Station, director of the Texas Engineering Extension Service, and dean of engineering of the A. and M. College of Texas in addition to his present position.

Prior to 1955, he was associated with the Pennsylvania State University and the University of Oklahoma, serving also as a consultant for several private organizations and research laboratories. He is also the author of many scientific papers on petroleum and natural gas engineering.

Note: See Commercial Fisheries Review, September 1961 p. 111.

Interstate Commerce Commission

STANDARD COMMODITY (INCLUDING FISHERY PRODUCTS) CODE FOR REPORTING PURPOSES PROPOSED:

The Interstate Commerce Commission in a Notice of Proposed Rule Making published in the Federal Register of February 2, 1963, listed the proposed commodity classifications for reporting purposes applicable to most common carriers. The notice as it appeared in the Federal Register, February 2, 1963, and the parts of Appendix A of some interest to the fishing industry follow:

INTERSTATE COMMERCE COMMISSION

[49 CFR Parts 123, 206, 301]

[Docket No. 34206]

COMMODITY CLASSIFICATION FOR REPORTING PURPOSES

Notice of Proposed Rule Making

JANUARY 9, 1963.

Notice is hereby given pursuant to section 4 of the Administrative Procedure Act, 5 U.S.C. 1003, that the Commission proposes to amend 49 CFR 123.1 to 123.5, 123.21 to 123.27, both inclusive, 49 CFR 206, and 49 CFR 301.10 and 301.20, as may be necessary, to provide that Class I and II railroads, other than switching or terminal companies, Class A and B carriers by water, maritime carriers, and Class I common and contract motor carriers of property operating in intercity service, to the extent that any such carriers now are required to report commodity statistics either on an annual or a quarterly basis, be required, effective with reports for the calendar year 1964 or the first quarter thereof, as the case might be, to report commodity statistics on the basis of the commodity classification set forth in Appendix A below, which is hereby referred to and made a part of this notice, in lieu of the commodity classifications set forth in Appendix I to 49 CFR 123.1 to 123.5, in Appendix I to 49 CFR 123.21 to 123.27, and in 49 CFR 206.8.

(49 CFR 123.1 to 123.5, sec. 12, 24 Stat. 383, as amended; 49 U.S.C. 12. Interpret or apply sec. 20, 24 Stat. 386, as amended; 49 U.S.C. 20)

(49 CFR 123.21 to 123.27, authorities set out above, also interpret or apply sec. 313, 54 Stat. 944, as amended; 49 U.S.C. 913)

(49 CFR 301.10 and 301.20, sec. 304, 54 Stat. 933, 49 U.S.C. 904. Interpret or apply sec. 313, 54 Stat. 944, as amended; 49 U.S.C. 913)

The proposed changes will affect the presently required reporting of commodity statistics by the respective types of carriers named above. The carriers will be required to report such statistics on the basis of the "Proposed ICC Standard Commodity Code" reproduced in Appendix A, rather than on the basis of the presently required commodity classification. No other changes are contemplated in other provisions affecting the reporting of commodity statistics under the terms of the respective sections, in the number of copies of the required reports to be filed, the place of filing, or the times following the close of the covered periods in which the respective reports must be filed.

The "Proposed ICC Standard Commodity Code" has been designed so that statistics reported thereunder for use of the Commission may be related to existing and projected commodity data compiled and published by the Federal government. It is an adaptation of the "Commodity Classification for Transportation Statistics" developed by the Office of Statistical Standards, Bureau of the Budget, for use in the planned Census of Transportation for 1963, which in turn was based on the Standard Industrial Classification (S.I.C.) prepared by the Bureau of the Budget and used generally by government agencies and others in the collection and presentation of data relating to business establishments. The "Proposed ICC Standard Commodity Code" is compatible with the "Proposed Standard Transportation Commodity Code" developed also on the basis of the Bureau of the Budget "Commodity Classification for Transportation Statistics" by the Association of American Railroads and proposed for use within the railroad industry effective January 1, 1964.

Any party desiring to make representations in regard to the proposed change may do so through submission of written data, views or arguments. The original and 6 copies of such representations must be filed with the Interstate Commerce Commission, Washington 25, D.C., within 60 days of the publication hereof in the FEDERAL REGISTER.

A copy of this notice shall be mailed to each railroad, motor carrier, and water carrier subject to the commodity statistics reporting requirements of the respective CFR sections named herein, and notice shall be given to the general public by depositing a copy in the office of the Secretary of the Commission at Washington, D.C., and by filing a copy with the Director, Office of the Federal Register.

By the Commission, Division 2.

[SEAL] HAROLD D. MCCOY, *Secretary.*

APPENDIX A

PROPOSED ICC STANDARD COMMODITY CODE FOR REPORTING PURPOSES

Code	*Description*
09	FRESH FISH AND OTHER MARINE PRODUCTS
091	Fresh Fish and Other Marine Products:
0912	Fresh fish and whale products, including frozen unpackaged fish—
09120	Fresh fish and whale products, including frozen unpackaged fish: Finfish; shellfish; whale products.
0913	Marine products—
09130	Marine animal skins, except whale skins, untanned; miscellaneous marine products.
09131	Shells (oyster, crab, clam, etc.).
2031	Canned and cured sea foods—
20310	Canned and cured sea foods: Canned fish and other sea food; canned sea food soup, stews and chowders; smoked, salted, pickled and dried fish; fish roe and livers.
2036	Fresh or frozen packaged fish—
20360	Fresh or frozen packaged fish: Frozen packaged fish and other sea food; fresh packaged fish and other sea food.
2095	Marine fats and oils—
20950	Marine fats and oils: Marine oil mill products; marine oil mill byproducts (meal, scrap, tankage).
373	Ships and Boats:
3732	Ships and boats—
37320	Ships and boats: Inboard motor boats; outboard motor boats; nonpropelled ships (barges, dredges); car floats, pontoon and portable bridges; ships and boats and parts, n.e.c.
3949	Sporting and athletic goods—
39490	Sporting and athletic goods: Fishing tackle and equipment; billiard and pool tables, and playing supplies, including balls; bowling alleys and bowl-

ing alley playing supplies, including balls; golf clubs, golf balls and equipment and supplies; tennis, baseball, cricket, softball, football, basketball, soccer equipment and supplies, including balls; playground equipment; sporting and athletic goods, n.e.c.

42111 Shipping containers, bags, barrels bottles, boxes, cones, drums, tubes, etc., returned, empty.

42112 Shipping carriers or devices, blocking, bolsters, cradles, pallets, racks, etc., returned, empty.

U. S. Tariff Commission

CHANGES IN IMPORT TARIFF SCHEDULES FOR SOME FISHERY PRODUCTS AND GEAR PROPOSED:

A proposal for a Fifth Supplemental Report of changes in the Tariff Schedules of the United States necessary to reflect changes made in the tariff treatment of imported articles as set forth by various statutes and administrative and judicial rulings has been made public. The notice by the U. S. Tariff Commission was published in the Federal Register of February 27, 1963.

Items listed of interest to the fishing industry are anchovy oil and fishing nets (including sections thereof). Provisions of Annex I state that further consideration is being given to determine whether to establish anchovy oil (item 177.12), and carrageen and carrageenin (items 192.05-192.07). Notice was given that the following additional items will be considered as included in Annex I to the Commission's public notice issued February 21, 1963:

"11a Item 355.45--Fish netting and fishing nets (including sections thereof). Further consideration is being given to determine whether a rate adjustment is necessary."

A public hearing was held on March 14, 1963, in the Tariff Commission Building, Washington, D.C.

Treasury Department

BUREAU OF CUSTOMS

GROUNDFISH FILLET IMPORT TARIFF-RATE QUOTA FOR 1963:

The reduced-tariff-rate import quota on fresh and frozen groundfish (cod, haddock, hake, pollock, cusk, and ocean perch) fillets and steaks for calendar year 1963 is 24,874,871 pounds, the Bureau of Customs announced in the February 21, 1963, Federal Register. Divided into quarterly quotas this means that 6,218,718 pounds of groundfish fillets and steaks during each quarter of 1963 may be imported at the 1-7/8 cents-per-pound rate of duty and any imports over the quarterly quota will be dutiable at the rate of 2-1/2 cents a pound.

The reduced-rate import quota for 1963 is 12.9 percent less than the 1962 quota of 28,571,433 pounds. From 1951 to 1960 the quantity of fresh and frozen groundfish fillets permitted to enter the United States at the reduced rate of duty of 1-7/8 cents a pound had increased 24.7 percent, but in 1961 the trend was reversed significantly for the first time because in 1960 frozen fish fillet blocks with bits and pieces were no longer dutiable under the Tariff category of "frozen groundfish fillets." A further decline took place in 1963. The 1963 quota (the lowest since 1950) is 15.1 percent less than in 1951.

Reduced-Tariff-Rate Import Quota for Fresh and Frozen Groundfish Fillets, 1953-1963

Year	Quota
	1,000 Lbs.
1963	24,875
1962	28,571
1961	32,601
1960	36,533
1959	36,920
1958	35,892
1957	37,376
1956	35,197
1955	35,433
1954	33,950
1953	33,866

Average aggregate apparent annual consumption in the United States of fresh and frozen groundfish fillets and steaks (including the fillet blocks and slabs used in the manufacture of fish sticks, but excluding fish blocks since September 15, 1959, and blocks of fish bits) for the three years (1960-62) preceding 1963 was only 165,832,470 pounds, calculated in accordance with the proviso to item 717(b) of Part 1, Schedule XX, of the General Agreement on Tariff and Trade (T. D. 51802). This was far below the consumption of 217,337,633 pounds in 1958-60 and 243,554,480 pounds for 1957-59.

A decision by the United States Customs Court in 1959 held that fish blocks imported in bulk are dutiable at one cent a pound under Tariff paragraph 720(b). Prior to that decision, fish blocks were classified under paragraph 717(b), the same as fish fillets. The change became effective September 15, 1959, and fish blocks imported in bulk since that date have been classified under paragraph 720(b). Therefore, fish blocks imported since the effective date have not entered in the calculation of apparent annual consumption or the quota since only imports under 717(b) are considered in the calculation. In view of this, it is estimated that if fish blocks had remained under the 717(b) classification, apparent annual consumption for 1960-62 would have been greater than that for the previous three-year period, and also the quota for 1963 would have been greater than that for 1961 and 1962.

FOREIGN ASSETS CONTROL

CERTIFICATES FOR IMPORTATION OF DRIED CUTTLEFISH FROM TAIWAN AVAILABLE:

A notice was published in the Federal Register of February 15, 1963, concerning the importation of certain merchandise directly

from Taiwan which included dried cuttlefish. The notice as it appeared in the February 15, 1963, Register follows:

IMPORTATION OF CERTAIN MERCHANDISE DIRECTLY FROM TAIWAN

Available Certifications by Government of Republic of China

Notice is hereby given that certificates of origin issued by the Ministry of Economic Affairs of the Republic of China under procedures agreed upon between that Government and the Foreign Assets Control are now available with respect to the importation into the United States directly, or on a through bill of lading, from Taiwan (Formosa) of the following additional commodities:

Cornmint oil.
Cuttlefish, dried (Mow Yu).

[SEAL] MARGARET W. SCHWARTZ,
Director,
Foreign Assets Control.

Eighty-Eighth Congress

(First Session)

Public bills and resolutions which may directly or indirectly affect the fisheries and allied industries are reported upon. Introduc-

tion, referral to committees, pertinent legislative actions by the House and Senate, as well as signature into law or other final disposition are covered.

ANADROMOUS FISH CONSERVATION: H. R. 3995 (Shelley) introduced in House Feb. 21, 1963, to authorize the Secretary of the Interior to initiate a program for the conservation, development and enhancement of the Nation's anadromous fish in cooperation with the several States; also H. R. 4225 (Cohelan) introduced Feb. 26, 1963, both referred to Committee on Merchant Marine and Fisheries.

CHEMICAL PESTICIDES COORDINATION: H. R. 4487 (Dingell) introduced in House Mar. 4, 1963, to amend the act of August 1, 1958, in order to prevent or minimize injury to fish and wildlife from the use of insecticides, herbicides, fungicides, and pesticides; referred to the Committee on Merchant Marine and Fisheries.

COMMERCIAL FISHERIES FUND: On Feb. 25, 1963, the House and Senate were presented with a resolution of the Senate of the State of Alaska (Senate Resolution 15) urging the Congress of the United States to give favorable consideration to S. 627 (Bartlett of Alaska), a bill to promote State commercial fishery research and development projects. The resolution further states that several states of the Union have taken the initiative in fishery research and development; the offshore fishery resources of the United States are the proper concern of both the Federal and State Governments; the Federal Government has an obligation to encourage and assist in State research and development programs; and a bold program to assist the States in their efforts to develop their fishing resources is essential to the proper conservation and utilization of this basic resource. The resolution was referred to the Senate Committee on Commerce and the House Committee on Merchant Marine and Fisheries.

H. R. 5229 (O'Hara) introduced in House Mar. 28, 1963, to promote State commercial fishery research and development projects, and for other purposes; referred to the Committee on Merchant Marine and Fisheries.

COMMODITY PACKAGING AND LABELING: The Antitrust and Monopoly Subcommittee of the Senate Committee on the Judiciary on Mar. 6, 1963, began a series of hearings on S. 387, to amend the Clayton Act to prohibit restraints of trade carried into effect through the use of unfair and deceptive methods of packing or labeling certain consumer commodities distributed in commerce, and for other purposes. Directs the Food and Drug Administration--for foods, drugs, and cosmetics--and the Federal Trade Commission--for other consumer commodities--to promulgate regulations that will require packages accurately and clearly to give essential product information and fairly represent the contents. The Committee on Mar. 25, 1963, recessed its hearings, subject to call.

DELAWARE RIVER BASIN: H. Doc. 522, Volumes VIII, X, and XI, Delaware River Basin, New York, New Jersey, Pennsylvania, and Delaware (A letter from the Chief of Engineers, Department of the Army, dated April 2, 1962; submitting a report, together with accompanying papers and illustrations, on a review of the Delaware River and tributaries, requested by a resolution of the Committee on Public Works, U. S. Senate, adopted April 13, 1950, and other resolutions of that Committee and of the Committee on Public Works, House of Representatives, listed in the Report, House of Representatives, 87th Congress, 2nd Session), 554 pp., 266 pp., and 172 pp., respectively, illus., printed. Volume VIII contains Appendix O, intrastate water resources survey; included are sections on water pollution, fish and game management, and the University of Delaware marine laboratories. Volume X contains Appendix T, hydroelectric power, and Appendix U, project designs and cost estimates. Volume XI contains Appendix V, benefits and cost allocations; Appendix W, recreation needs and appraisals; and Appendix X, study of the governmental organization for the water resources of the Delaware River Basin.

Correction: In the March 1963 issue under the heading: Delaware River Basin, Volumes V and IX, listed as 88th Congress, 1st Session, should have read 87th Congress, 2nd Session.

EMERGENCY FOOD STOCKPILING: H. R. 362 (Hull) introduced in House Jan. 9, 1963, to provide for the stockpiling, storage, and distribution of essential foodstuffs and other essential items for the sustenance of the civilian population of the United States, its territories, possessions, and the District of Columbia, in the event of enemy attack or other disaster; referred to the Committee on Armed Forces. Under the terms of the bill the food for the stockpile would be obtained where possible from the Commodity Credit Corporation, but other foodstuffs necessary but not available from that source would be purchased on a competitive basis. Presumably, processed fishery products would fall within this latter category.

EXEMPT TRANSPORTATION OF AGRICULTURAL AND FISHERY PRODUCTS: H. R. 4700 (Harris) introduced in House Mar. 11, 1963, and S. 1061 (Magnuson) introduced in the Senate Mar. 14, 1963, to exempt certain carriers from minimum rate regulation in the transportation of bulk commodities, agricultural and fishery products, and passengers, and for other purposes; referred to the House Committee on Interstate and Foreign Commerce and the Senate Committee on Commerce. Exempts carriers from minimum rate regulation by the Civil Aeronautics Board, the Federal Maritime Commission, and the Interstate Commerce Commission in the transportation of bulk commodities and certain agricultural and fishery products. Such exemption applies to (1) bulk commodities, (2) agricultural and fishery products, and (3) passengers. The exemption from minimum rate regulation for the transportation of certain agricultural and fishery products (specified in sec. 203(b) of the Interstate Commerce Act) now available to only motor carriers and freight forwarders would be extended under this section to all carriers subject to the Interstate Commerce Act. Defines "Property consisting of ordinary livestock, fish (including shellfish), or agricultural (including horticultural) commodities (not including manufactured products thereof) shall not be deemed to include frozen fruits, frozen berries, frozen vegetables, wool tops, and noils, or wool waste (carded spun, woven, or knitted), and shall be deemed to specifically include cooked or uncooked (including breaded) fish or shellfish when frozen or fresh (but not including fish and shellfish which have been treated for preserving such as canned, smoked, pickled, spiced, corned, or kippered product)."

FISH AND WILDLIFE AID THROUGH EQUIPMENT TRANSFER: H. R. 4705 (McDowell) was introduced Mar. 11, 1963, to amend the provisions of law relating to the disposition of surplus real property for park and recreational area, historic monument, and fish and wildlife conservation purposes; referred to the Committee on Government Operations.

A similar bill H. R. 5161 (Barry) introduced in House Mar. 28, 1963, to provide that surplus personal property of the United States may be donated to the States for the promotion of fish and wildlife management activities, and for other purposes; referred to the Committee on Government Operations.

FISH FARMERS PROGRAM: On Mar. 8, 1963, Senator Fulbright of Arkansas, presented to the Senate a resolution passed by the 65th General Assembly of the State of Arkansas (Senate Concurrent Resolution 5), urging the acceleration of programs designed to assist fish farmers. In his remarks Senator Fulbright stated he was hopeful that the work of both the Bureau of Commercial Fisheries and the Bureau of Sport Fisheries and Wildlife on fish farming problems can be expedited in next fiscal year.

FISHERIES AND OCEANOGRAPHY DEPARTMENT: On Mar. 4, 1963, the Senate and the House were presented with a resolution of the Senate of the State of the State of Alaska (Senate Joint Resolution 9) urging the President of the United States to establish a Department of Fisheries and Oceanography. The resolution further states that the fisheries of the United States occupy an ever-increasing importance to the general well-being of the Nation; the power of States to adequately protect and enhance the value of fisheries is clearly limited by the nature of our constitutional system; foreign nationals have created competitive pressures which may only be met on a national scale; the past lack of interest of Federal authorities in fisheries problems has resulted in a drop of American fisheries production from second to fifth in the world market, and a complete lack of aid and protection for American fishermen; fisheries provide a source of livelihood for hundreds of thousands of American citizens deserving of constant Federal attention to the maintenance and improvement of the industry; a cabinet level Department of Fisheries and Oceanography containing a research and management section and an international section is necessary to deal with the scope and magnitude of the problems involved; and that Governor William A. Egan of Alaska has already requested the President of the United States to make every effort toward establishing such a cabinet position. Referred to the Senate Committee on Commerce and the House Committee on Government Operations.

FISHERY MARKETING ACT AMENDMENT: S. 1135 (Magnuson and Bartlett) introduced in Senate Mar. 19, 1963, to make clear that fishermen's organizations, regardless of their technical legal status, have a voice in the ex-vessel sale of fish or other aquatic products on which the livelihood of their members depends; referred to the Committee on Commerce. Would amend the Fisheries Marketing Act of 1934, an act originally designed to provide fishermen as primary producers with the right of self-association for cooperative improvement of their conditions. The amendment seeks to bring the Marketing Act up to date by relating it to the practical problems that presently cloud the rights of fishermen to associate themselves together, whether in unions or cooperatives, and collectively bargain for a fair return on the fish harvested.

Collective Bargaining for Fishermen (Hearings before the Subcommittee on Merchant Marine and Fisheries of the Committee on Commerce, U. S. Senate, 87th Congress, 2nd Session), 254 pp., printed. Contains hearings held Oct. 15, 16, 17, 18, 19, and Nov. 8, 1962, on S. 3093, to make clear that fishermen's organizations, regardless of their technical legal status, have a voice in the ex-vessel sale of fish or other aquatic products on which the livelihood of their members depends. The hearings were held in the following locations: Seattle, Washington; Ketchikan, Petersburg, Anchorage, Dillingham, and Kodiak, Alaska.

FISH HATCHERY (EASTERN KENTUCKY): H. R. 4324 (Natcher) introduced in House Feb. 27, 1963, to provide for the establishment of a new fish hatchery on or near the Cumberland River in the eastern part of the State of Kentucky; referred to the Committee on Merchant Marine and Fisheries.

FISH HATCHERY (KENTUCKY): H. R. 4190 (Perkins) introduced in House Feb. 25, 1963, to provide for the

establishment of a fish hatchery in the State of Kentucky; referred to the Committee on Merchant Marine and Fisheries. Also H. R. 4478 introduced in House Mar. 4, 1963.

FOOD-FOR-PEACE, AND FISH: The Senate of the State of Alaska on Feb. 25, 1963, presented a resolution (Senate Resolution 16) to the Senate and the House, requesting that favorable consideration be given to S. 702 (Bartlett et al), a bill which would make a domestically-produced fishery product available for distribution under the food-for-peace program to assist that program and the development of the domestic fishery. The resolution states further that the Federal Government has embarked on a program of Food for Peace to facilitate the purchase of domestic food surpluses for sale to needy foreign nations; the use of high-protein value fishery products would contribute to the value of the program; the development of the offshore fishery resources of the United States can be protected only if expanding domestic and foreign markets are provided and developed; and the untapped offshore fishery resources of the United States are being harvested by foreign powers unconcerned with proper conservation measures. The resolution was referred to the Senate Committee on Commerce and the House Committee on Merchant Marine and Fisheries.

HIGHWAYS AND FISH AND WILDLIFE PROTECTION: H. R. 4488 (Dingell) introduced in House Mar. 4, 1963, to amend the Fish and Wildlife Coordination Act to require approval by the Secretary of the Interior of highway projects before they can be constructed; referred to the Committee on Merchant Marine and Fisheries.

IMPORTED COMMODITY LABELING: The House on Feb. 26, 1963, considered and passed H. R. 2513, to require certain new packages of imported articles to be marked to indicate the country of origin, and for other purposes. Bill would make three substantial changes in existing law; (1) it would be required that articles removed from a container be marked to show country of origin; (2) containers for articles for export to the United States must be marked to indicate that in the event of repackaging, such repackaging must contain the designation of the country of origin; (3) there is a penalty provision for failure to comply with these marking requirements applicable in the case of repackaging. The Senate on Feb. 28, 1963, received the bill and referred it to the Committee on Finance.

The Senate Committee on Finance, on Mar. 21, 1963, held hearings on H. R. 2513.

INTERIOR DEPARTMENT APPROPRIATIONS FY 1964: The Senate Committee on Appropriations on Feb. 26, 1963, began hearings on the fiscal 1964 budget estimates for the Department of the Interior. Included are funds for the Fish and Wildlife Service, its two bureaus--Commercial Fisheries and Sport Fisheries and Wildlife--and the Office of the Commissioner. Testimony on behalf of the Bureau of Commercial Fisheries was given by the Commissioner, Fish and Wildlife Service, and the Director of the Bureau on Mar. 6, 1963.

H. R. 5279 (Kirwan) introduced in House Mar. 28, 1963. The bill was reported favorably (H. Rept. 177) to the House by the Committee on Appropriations on the same date. The Committee recommended a total of $65,933,400 for Fish and Wildlife Service funds for FY 1964, against the budget estimate of $74,666,000 and $62,746,300 for 1963 appropriations. The Bureau of Commercial Fisheries portion for FY 1964 is $20,665,000, against $26,526,000 for the budget estimate and $27,098,000 for 1963 appropriations; the Bureau of Sport Fisheries and Wildlife portion for FY 1964 is $44,882,400 as compared with $47,754,000 for the budget estimate and $35,284,300 for fiscal year 1963; the Office of the Commissioner amount for FY 1964 is $386,000, the same amount as the budget estimate, the appropriations for 1963 amounted to $375,000.

H. R. 177, Department of the Interior and Related Agencies Appropriation Bill, 1964 (Mar. 28, 1963, a report from the House Committee on Appropriations, to accompany H. R. 5279), 46 pp., printed. Included are funds for the Fish and Wildlife Service, its two bureaus--Commercial Fisheries and Sport Fisheries and Wildlife, and the Office of the Commissioner.

For the Bureau of Commercial Fisheries under management and investigations of resources, the Committee recommended an allowance of $17,175,000, an increase of $1,678,000 in the 1963 appropriation and a decrease of $1,853,000 in the 1964 budget estimate. The increases allowed under marketing and technology include: $70,500 for Caribbean and Tropical Atlantic fisheries explorations; $22,000 for Foreign Fisheries and Trade Unit; $36,000 for maintenance of exploratory fish and gear research vessels; and $446,600 for development of fish protein concentrate. The increase recommended under research includes $447,700 for participation in the International Tropical Atlantic Fishery-Oceanographic Program; $414,000 for operation of the research vessel Townsend Cromwell and initiation of Central Pacific oceanographic and biological research programs; $61,000 for increased costs of operating the National Oceanographic Data Center; and $52,200 for continued participation in the International Indian Ocean expedition.

In the special foreign currency program the Committee recommended the budget estimate of $300,000, the same as the 1963 appropriation.

Under construction the Committee recommended $1,800,000, a decrease of $6,673,000 in the 1963 appropriation and a reduction of $3,953,000 in the 1964 budget estimate. The disallowance includes $1,095,000 of the $1,165,000 for planning and construction of a shellfisheries research center at Milford, Conn., $70,000 was allowed to provide for the planning, which the Committee believes should be completed before construction funds are considered. Also disallowed is $2,650,000 requested for construction of a fishery research vessel for use in the North Pacific and Bering Sea pending completion of the design for which funds are currently available. The Committee reduction also includes $8,000 of the request for advance planning for construction of laboratories and vessels and $200,000 of the $500,000 proposed to continue operational studies under the Columbia River Fishery facilities program.

The Committee has allowed the budget estimate of $750,000, the same as the 1963 appropriation, for payment of subsidies for the construction of fishing vessels in U. S. shipyards under the provisions of the Act of June 12, 1960.

The Committee has allowed $640,000, an increase of $17,000 in the 1963 appropriation, and a decrease of $55,000 in the 1964 budget estimate for general administrative expenses.

The Committee has allowed $2,468,000 for administration of the Pribilof Islands, an increase of $450,000 in the amount available for the current fiscal year, and a decrease of $85,000 in the budget request.

For the Bureau of Sport Fisheries and Wildlife, the Committee recommended an appropriation of $29,879,400, an increase of $2,117,400 in the 1963 appropriation, and a decrease of $1,604,600 in the 1964 budget estimate. Increases over the 1963 appropriations includes $367,000 for operation of new hatcheries and other facilities; $50,000 for planning of the National Fisheries Center and Aquarium; $100,000 for expansion of pesticide-wildlife studies; $140,000 for waterfowl management investigations; $187,000 for investigations of wildlife control methods; and $75,000 for site selection and engineering design of a marine game fish research station at Narragansett Bay, Rhode Island.

The Committee recommended for the Office of the Commissioner, the budget estimate of $386,000, an increase of $11,000 in the 1963 appropriations.

NATIONAL FISHERIES CENTER AND AQUARIUM: The Senate on Mar. 8, 1963, appointed Senators Magnuson and Prouty to the National Fisheries Center Advisory Board, for 4 years and 2 years respectively.

MEDICAL CARE FOR VESSEL OWNERS: On Mar. 25, 1963, the House and the Senate were presented with a resolution of the Senate of the State of Alaska (Senate Resolution 31), urging Congress to give favorable consideration to S. 978, to restore medical care benefits to owner-operators of fishing vessels and self-employed seamen under Federal law as an equitable action and a forward step toward the revival of the Nation's maritime industry.

OCEANOGRAPHIC RESEARCH PROGRAM: H. R. 4428 (Burke) introduced in House Mar. 4, 1963, to provide for a comprehensive, long-range, and coordinated program in oceanography, and for other purposes; referred to Committee on Merchant Marine and Fisheries.

OUTDOOR RECREATION BUREAU: The Senate on Feb. 28, 1963, received the report (S. Rept. 11) on S. 20, to promote the coordination and development of the effective Federal and State programs relating to outdoor recreation, and for other purposes. Authorities and responsibilities given the Secretary of the Interior through the bill would include maintenance of an inventory of outdoor recreation facilities, establishment of a classification system, provision for technical assistance, encouragement of regional cooperation by the States and developing facilities, conducting research, cooperating with educational institutions in developing personnel and disseminating recreation knowledge, and promoting coordination of Federal activities in outdoor recreation.

Outdoor Recreation Act of 1963 (Hearing before the Committee on Interior and Insular Affairs, U. S. Senate, 88th Congress, 1st Session on S. 20); 51 pp., printed. Contains hearing held Feb. 5, 1963; departmental reports; statements given by various Government agencies and interested organizations; and communications sent to the Committee.

S. Rept. 11, Federal and State Programs Relating to Outdoor Recreation (a report from the Committee on Interior and Insular Affairs, U. S. Senate, 88th Congress, 1st Session to accompany S. 20), 6 pp., printed. The Committee reported favorably, with amendments, and recommended passage of the bill. Contains the purpose of the bill, the amendments, and letter of transmittal of the bill to Congress.

The Senate on Mar. 11, 1963, passed with amendments, S. 20, to promote the coordination and development of the effective Federal and State programs relating to outdoor recreation, and for other purposes. The House on Mar. 12, 1963, received from the Senate, S. 20; referred to Committee on Interior and Insular Affairs.

The House on Mar. 28, 1963, received the report (H. Rept. 160) from the Committee on Interior and Insular Affairs on H. R. 1762, to promote the coordination and development of effective Federal and State programs relating to outdoor recreation, and for other purposes, with amendment; referred to the Committee of the Whole House on the State of the Union.

PACIFIC ISLANDS TRUST TERRITORY DEVELOPMENT: H. R. 3198 (O'Brien) introduced in House Jan. 31, 1963, to promote the economic and social development of the Trust Territory of the Pacific Islands, and for other purposes; referred to Committee on Interior and Insular Affairs. Among the provisions of the bill is an amendment to existing law which would place the Trust Territory in the same category as insular possessions of the United States so far as importation free of duty into the United States is concerned. There is, however, an exception which would prevent the importation into the United States of fishery products free of duty unless the fish from which the fishery products are made are landed in the Trust Territory from American flag vessels or Trust Territory vessels manned by crew two-thirds of which are citizens of the United States or the Trust Territory. The Trust Territory includes the Mariana Islands, Marshall Islands, and the Caroline Island, Also provides for scientific, technical, and other assistance that will promote the welfare of the Trust Territory. Under this provision, the Secretary of the Interior would be limited to the sum of $150,000 in any one fiscal year.

POLLUTION OF SEA BY OIL TREATY AMENDMENTS: The Senate on Mar. 25, 1963, received from the President, Executive C, 88th Congress, 1st Session, amendments of International Convention for the Prevention of Pollution of the Sea by Oil, 1954, which were adopted by a Conference of Contracting Governments convened at London on April 11, 1962; referred to the Committee on Foreign Relations. The amendments would strengthen and expand the present Convention in ways deemed advantageous to United States interests.

PRICE-QUALITY STABILIZATION: The following bills were introduced in the House: H. R. 3929 (Dent), H. R. 3943 (Friedel), H. R. 3983 (Rodebush), and H. R. 3998 (Stinson) Feb. 21, 1963; H. R. 4184 (O'Konski) Feb. 25, 1963; H. R. 4221 (Bray) Feb. 26, 1963; H. R. 4312 (Glenn) Feb. 27, 1963; H. R. 4477 (Stubbefield) Mar. 4, 1963; H. R. 4541 (Nygoard) Mar. 6, 1963; H. R. 4626 (Clark) Mar. 7, 1963; H. R. 4703 (Jarman) Mar. 11, 1963; H. R. 4930 (Baltin) Mar. 18, 1963; and H. R. 5032 (Harris) Mar. 21, 1963; to amend the Federal Trade Commission Act, to promote quality and price stabilization, to define and restrain certain unfair methods of distribution and to confirm, define, and equalize the rights of producers and resellers in the distribution of names, or trademarks, and for other purposes; all referred to the Committee on Interstate and Foreign Commerce.

The Subcommittee on Commerce and Finance of the House Committee on Interstate and Foreign Commerce, on Mar. 18, 1963, announced that public hearings will be held Apr. 23, 24, and 25, 1963, on H. R. 3669, and similar bills, regarding price-quality stabilization.

SALMON RIVER ANADROMOUS FISH: S. 1043 (Church et al) introduced in Senate Mar. 7, 1963, to provide for the conservation of anadromous fish spawning areas in the Salmon River, Idaho; referred to the Committee on Commerce. Would prohibit the Federal Power Commission from authorizing any structures on the Salmon River which would restrict the passage of anadromous fish to reach spawning areas or which would flood established spawning grounds.

SALTONSTALL-KENNEDY FUNDS REAPPORTIONMENT: H. R. 4204 (Tupper) introduced in House Feb. 25, 1963, to amend the Saltonstall-Kennedy Act so as to establish an additional fund for fishery research programs and fisheries rehabilitation and development projects, and for other purposes; referred to Committee on Merchant Marine and Fisheries. Also H. R. 4448 (Knox) introduced in House Mar. 4, 1963.

SCIENCE AND TECHNOLOGY COMMISSION: H. R. 4346 (Teague) introduced in House Feb. 27, 1963, for the establishment of a Commission on Science and Technology; referred to the Committee on Science and Astronautics. Commission would be composed of representatives from the legislative and executive branches of the Government and of persons from private life who are eminent in one or more fields of science or engineering, or who are qualified and experienced in policy determination and administration of industrial scientific research and technological activities. Provides for a study of all of the programs, methods and procedures of the Federal departments and agencies which are operating, conducting, and financing scientific programs, with objective of bringing about more economy and efficiency in the performance of these essential activities and functions. Also introduced in House H. R. 4846 (Wydler) Mar. 13, 1963; referred to Committee on Science and Astronautics.

The Senate on Mar. 4, 1963, received the report (S. Rept. 16) without amendment on S. 816, for the establishment of a Commission on Science and Technology, from the Committee on Government Operations.

S. Rept. 16, Establishment of a Commission on Science and Technology (Report of the Committee on Government Operations, U. S. Senate, 88th Congress, 1st Session on S. 816), 66 pp., printed. The Committee reported favorably on the bill and recommended passage. Contains analysis of the provisions of S. 816; comments on the role of science in Government, background--committee reports and staff studies; a summary of the hearings held during the 85th, 86th, and 87th sessions of Congress; and appendix.

The Senate on Mar. 8, 1963, considered and passed without amendment S. 816. The House on Mar. 11, 1963, received from the Senate S. 816, for the establishment of a Commission on Science and Technology; referred to the House Committee on Science and astronautics.

SUBMERGED LANDS ACT: S. 1109 (Long et al) introduced in Senate Mar. 15, 1963, to amend the Submerged Lands Act to establish the seaward boundaries of the States of Alabama, Mississippi, and Louisiana as extending three marine leagues into the Gulf of Mexico and providing for the ownership and use of the submerged lands, improvements, minerals, and natural resources within said boundaries; referred to the Committee on Interior and Insular Affairs. Similar to many House bills previously introduced.

TECHNOLOGICAL LABORATORY LAND IN MARYLAND: The Subcommittee on Mines and Mining of the House Committee on Interior and Insular Affairs on Mar. 12, 1963, held hearings on H. R. 2888, to provide for the conveyance of certain real property of the United States to the State of Maryland. Property affected includes the site of the Bureau of Commercial Fisheries Technological Laboratory at College Park, Maryland. Testimony was given by departmental witnesses and Rep. Lankford (Md.).

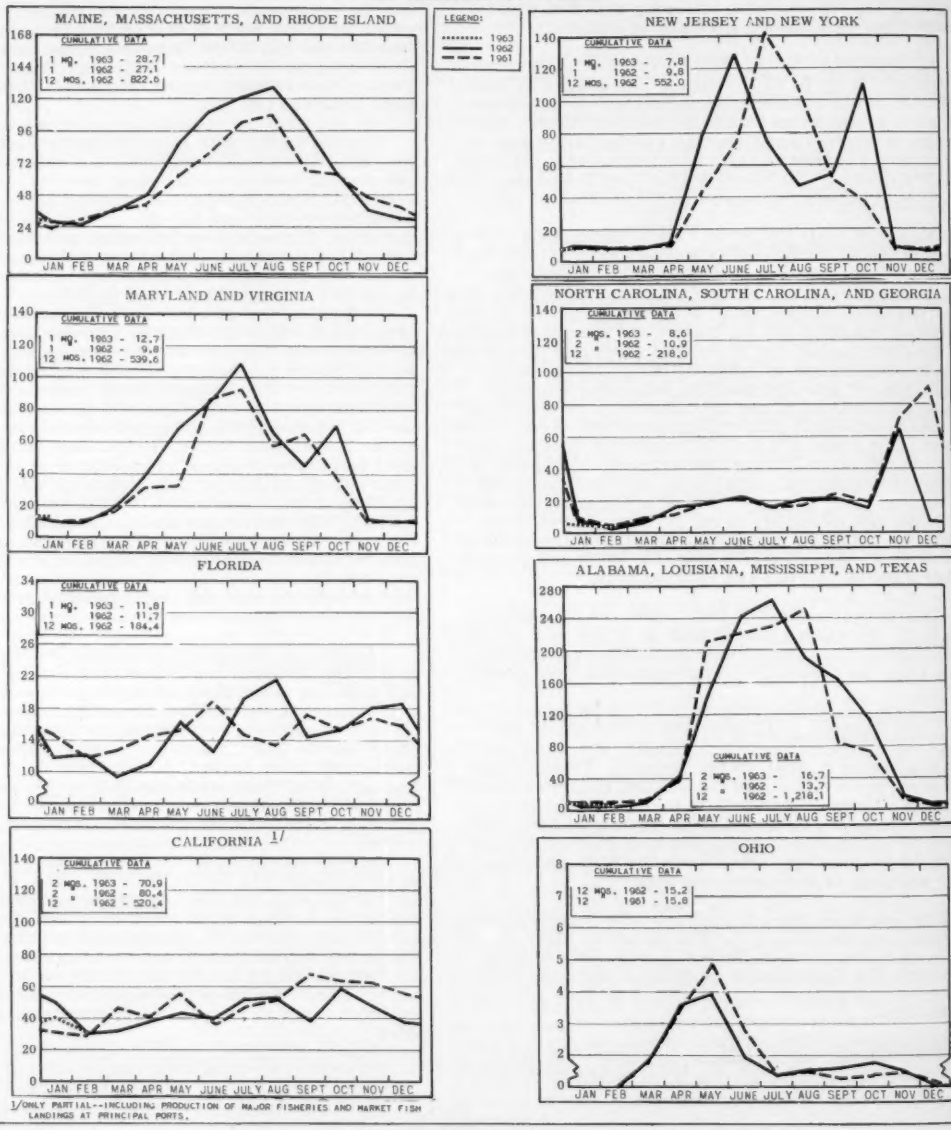
TRANSPORTATION ACT OF 1963: H. R. 4701 (Harris) introduced in House Mar. 11, 1963, and S. 1062 (Magnuson) introduced in Senate Mar. 14, 1963, to provide for strengthening and improving the national transportation system, and for other purposes; referred to the House Committee on Interstate and Foreign Commerce and the Senate Committee on Commerce. Bill would: (a) authorize and encourage common carriers to conduct experiments in rate simplification, freight classification, and new services; (b) extend to all shippers and carriers the right to ship vehicles and containers by any mode at non-discriminatory rates; (c) encourage the establishment of through service and joint rates by all combinations of modes and assure the reasonableness of such rates; (d) provide for cooperative enforcement of highway transportation regulation by the ICC and the States; (e) increase and extend the civil forfeiture penalties to violations of safety regulations and operations without authority; (f) require air carriers to pay reparations to shippers charged unlawfully high rates; (g) authorize simplification of Government transportation rates and procurement and greater flexibility in the use of motor vehicle common carriers for the transportation of mail; and (h) transfer the existing railroad loan guarantee program from the ICC to the Department of Commerce.

VESSEL CONSTRUCTION SUBSIDY AMENDMENT: H. R. 4203 (Tupper) introduced in House Feb. 25, 1963, to amend the act of June 12, 1960, for the correction of inequities in the construction of fishing vessels, and for other purposes; referred to the Committee on Merchant Marine and Fisheries. S. 1006 (Magnuson et al) introduced in the Senate Mar. 4, 1963; referred to the Committee on Commerce and H. R. 4429 (Fulton) introduced in House Mar. 4, 1963; referred to the Committee on Merchant Marine and Fisheries.

WATER RESOURCES COUNCIL: S. 1111 (Anderson et al) introduced in Senate Mar. 15, 1963, to provide for the optimum development of the Nation's natural resources through the coordinated planning of water and related land resources, through the establishment of a Water Resources Council and river basin commissions, and by providing financial assistance to the States in order to increase State participation in such planning; referred to the Committee on Interior and Insular Affairs.

CHART 1 - FISHERY LANDINGS for SELECTED STATES

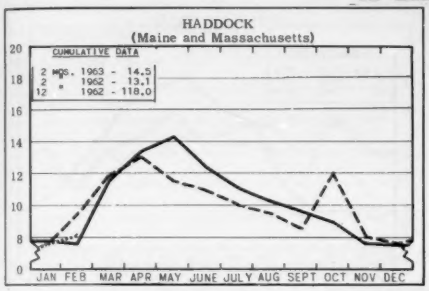
In Millions of Pounds

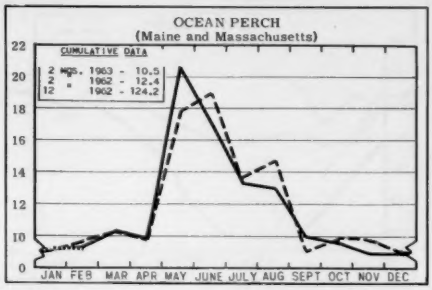

MAINE, MASSACHUSETTS, AND RHODE ISLAND
CUMULATIVE DATA
1 MO. 1963 - 28.7
1 " 1962 - 27.1
12 MOS. 1962 - 822.8
NEW JERSEY AND NEW YORK
CUMULATIVE DATA
1 MO. 1963 - 7.8
1 " 1962 - 9.8
12 MOS. 1962 - 552.0
LEGEND:
1963
1962
1961
MARYLAND AND VIRGINIA
CUMULATIVE DATA
1 MO. 1963 - 12.7
1 " 1962 - 9.8
12 MOS. 1962 - 539.6
NORTH CAROLINA, SOUTH CAROLINA, AND GEORGIA
CUMULATIVE DATA
2 MOS. 1963 - 8.6
2 " 1962 - 10.9
12 " 1962 - 218.0
FLORIDA
CUMULATIVE DATA
1 MO. 1963 - 11.8
1 " 1962 - 11.7
12 MOS. 1962 - 184.4
ALABAMA, LOUISIANA, MISSISSIPPI, AND TEXAS
CUMULATIVE DATA
2 MOS. 1963 - 16.7
2 " 1962 - 13.7
12 " 1962 - 1,218.1
CALIFORNIA 1/
CUMULATIVE DATA
2 MOS. 1963 - 70.9
2 " 1962 - 80.4
12 " 1962 - 520.4
OHIO
CUMULATIVE DATA
12 MOS. 1962 - 15.2
12 " 1961 - 15.8
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

1/ONLY PARTIAL--INCLUDING PRODUCTION OF MAJOR FISHERIES AND MARKET FISH LANDINGS AT PRINCIPAL PORTS.

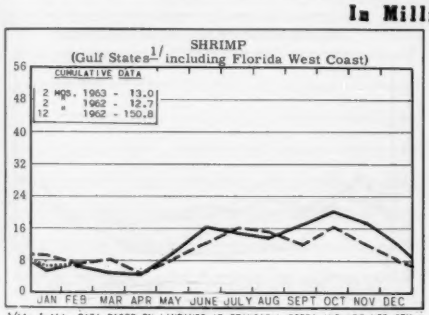
CHART 2 - LANDINGS for SELECTED FISHERIES

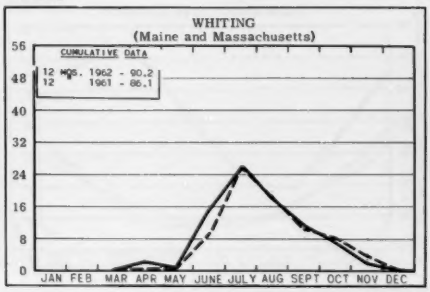
In Millions of Pounds


HADDOCK
(Maine and Massachusetts)
CUMULATIVE DATA
2 MOS. 1963 - 14.5
2 " 1962 - 13.1
12 " 1962 - 118.0
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC


OCEAN PERCH
(Maine and Massachusetts)
CUMULATIVE DATA
2 MOS. 1963 - 10.5
2 " 1962 - 12.4
12 " 1962 - 124.2
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

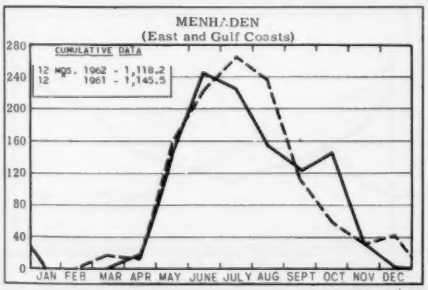
In Millions of Pounds

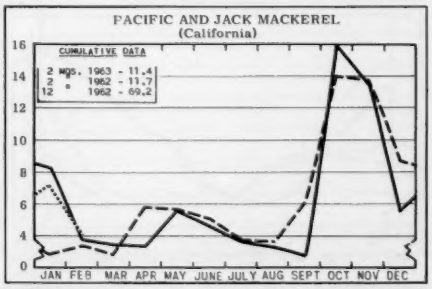

SHRIMP
(Gulf States 1/ including Florida West Coast)
CUMULATIVE DATA
2 MOS. 1963 - 13.0
2 " 1962 - 12.7
12 " 1962 - 150.8
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC


WHITING
(Maine and Massachusetts)
CUMULATIVE DATA
12 MOS. 1962 - 90.2
12 1961 - 86.1
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

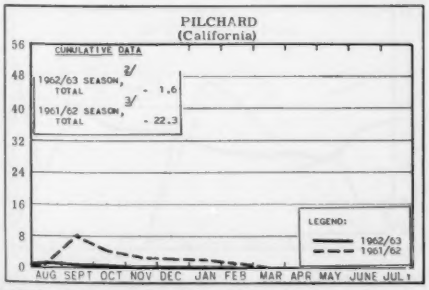
1/LA. & ALA. DATA BASED ON LANDINGS AT PRINCIPAL PORTS AND ARE NOT COMPLETE.

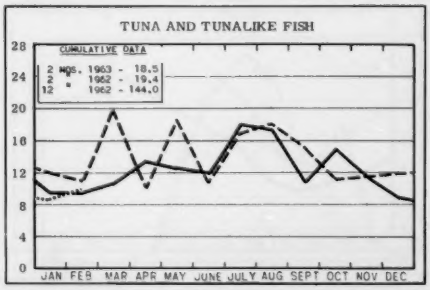
In Thousands of Tons


MENHADEN
(East and Gulf Coasts)
CUMULATIVE DATA
12 MOS. 1962 - 1,118.2
12 " 1961 - 1,145.5
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC


PACIFIC AND JACK MACKEREL
(California)
CUMULATIVE DATA
2 MOS. 1963 - 11.4
2 " 1962 - 11.7
12 " 1962 - 69.2
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

In Thousands of Tons

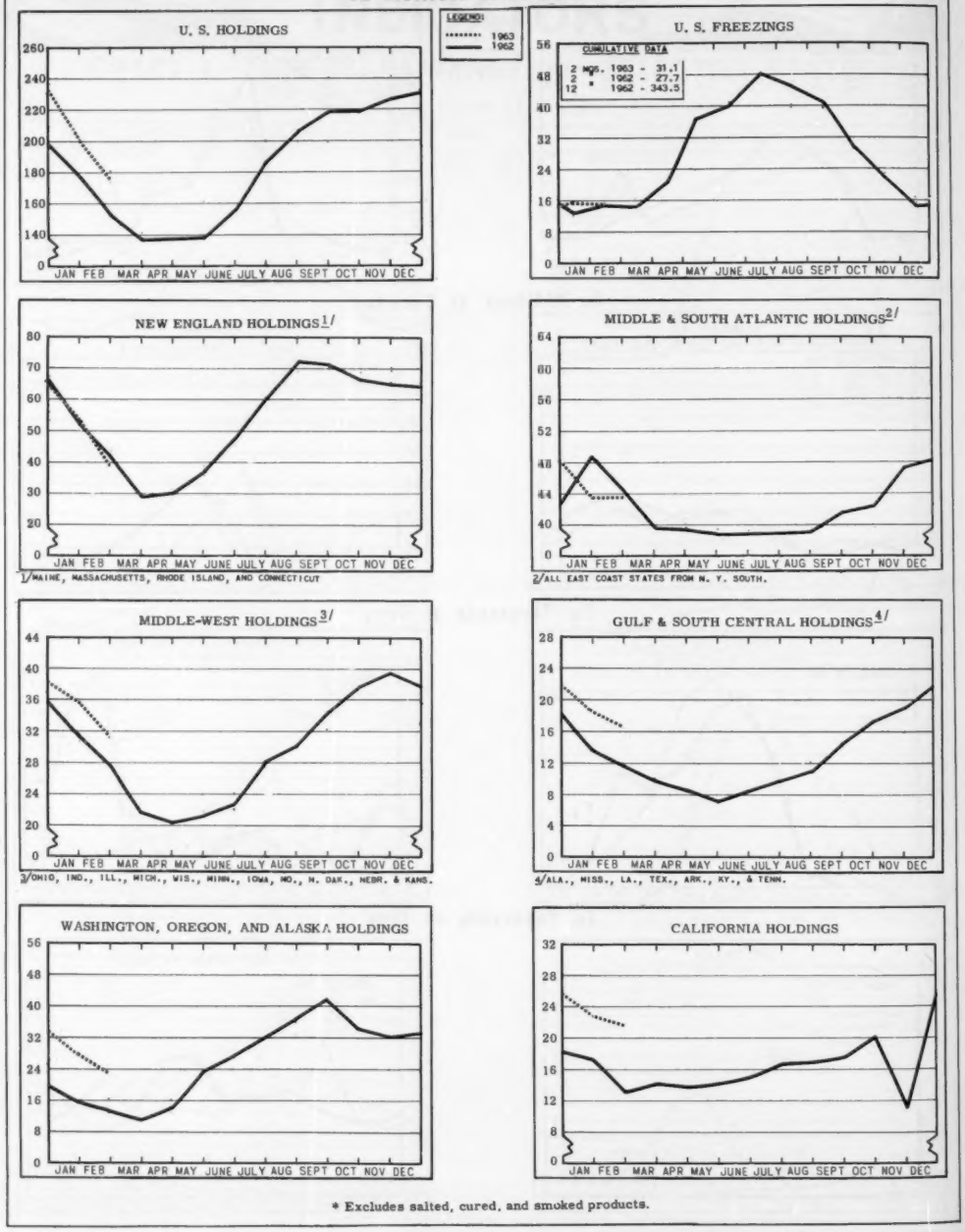



TUNA AND TUNALIKE FISH
CUMULATIVE DATA
2 MOS. 1963 - 18.5
2 " 1962 - 19.4
12 " 1962 - 144.0
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

2/SEASON TOTAL, AUG. 1, 1962-FEB. 28, 1963. 3/SEASON TOTAL, AUG. 1, 1961-FEB. 28, 1962.

CHART 3 - COLD-STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS *

In Millions of Pounds


U. S. HOLDINGS
LEGEND:
1963
1962
U. S. FREEZINGS
CUMULATIVE DATA
2 MOS. 1963 - 31.1
2 " 1962 - 27.7
12 " 1962 - 343.5
NEW ENGLAND HOLDINGS 1/
MIDDLE & SOUTH ATLANTIC HOLDINGS 2/
MIDDLE-WEST HOLDINGS 3/
GULF & SOUTH CENTRAL HOLDINGS 4/
WASHINGTON, OREGON, AND ALASKA HOLDINGS
CALIFORNIA HOLDINGS
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

1/MAINE, MASSACHUSETTS, RHODE ISLAND, AND CONNECTICUT

2/ALL EAST COAST STATES FROM N. Y. SOUTH.

3/OHIO, IND., ILL., MICH., WIS., MINN., IOWA, MO., N. DAK., NEBR. & KANS.

4/ALA., MISS., LA., TEX., ARK., KY., & TENN.

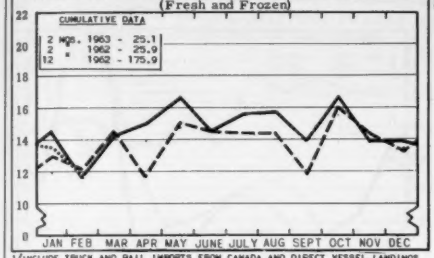
* Excludes salted, cured, and smoked products.

CHART 4 - RECEIPTS and COLD-STORAGE HOLDINGS of FISHERY PRODUCTS at PRINCIPAL DISTRIBUTION CENTERS

In Millions of Pounds

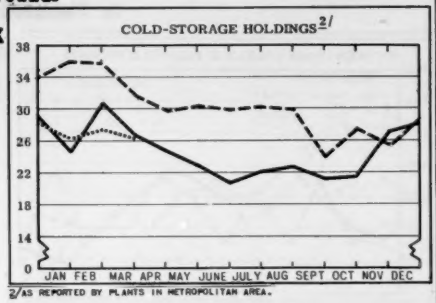
NEW YORK CITY

RECEIPTS [1] AT WHOLESALE SALT-WATER MARKET (Fresh and Frozen)



1/INCLUDE TRUCK AND RAIL IMPORTS FROM CANADA AND DIRECT VESSEL LANDINGS AT NEW YORK CITY.

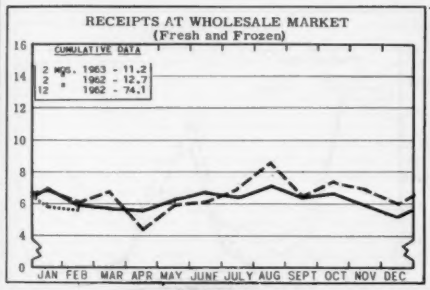
COLD-STORAGE HOLDINGS [2]



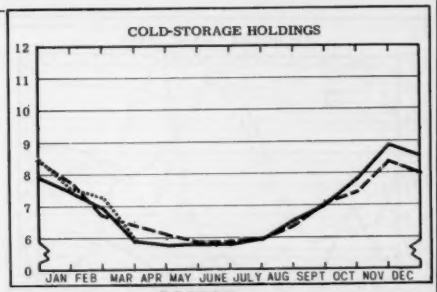
2/AS REPORTED BY PLANTS IN METROPOLITAN AREA.

CHICAGO

RECEIPTS AT WHOLESALE MARKET (Fresh and Frozen)

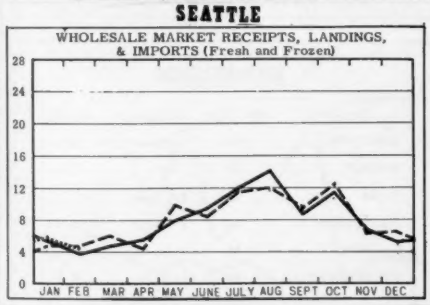


COLD-STORAGE HOLDINGS



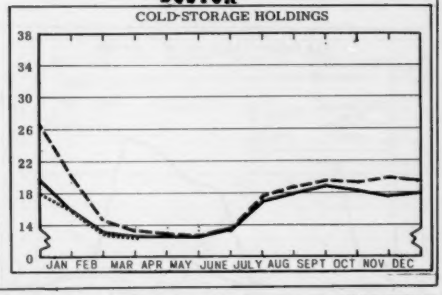
SEATTLE

WHOLESALE MARKET RECEIPTS, LANDINGS, & IMPORTS (Fresh and Frozen)



BOSTON

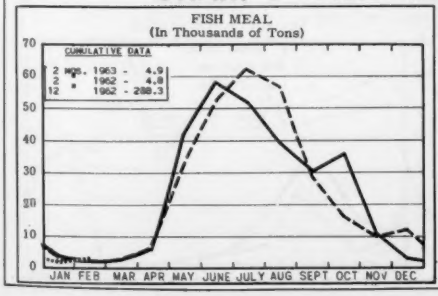
COLD-STORAGE HOLDINGS



LEGEND:
1963
1962
1961

CHART 5 - FISH MEAL and OIL PRODUCTION

FISH MEAL (In Thousands of Tons)



FISH OIL (In Millions of Gallons)

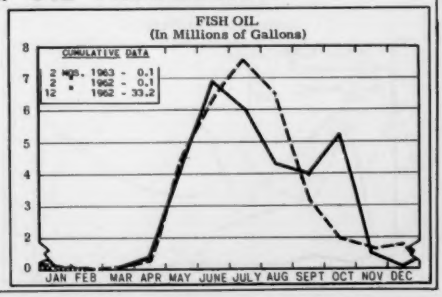
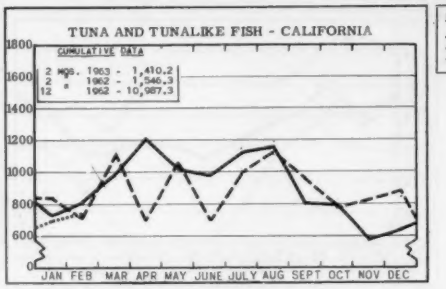
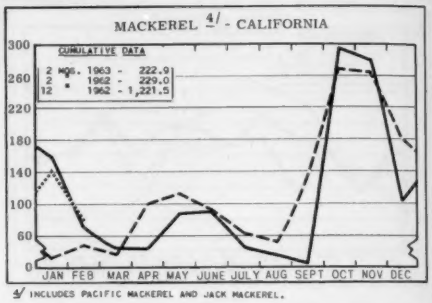


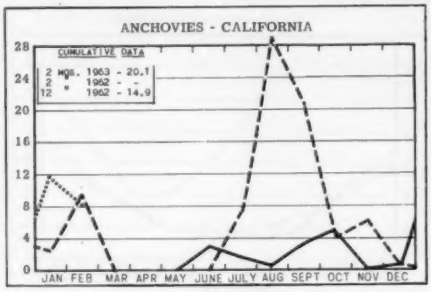
CHART 6 - CANNED PACKS of SELECTED FISHERY PRODUCTS

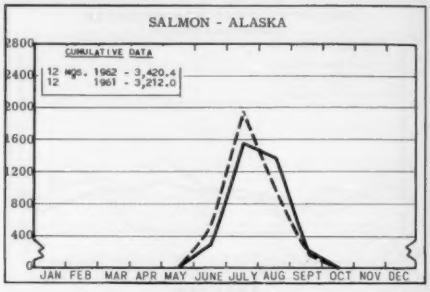
In Thousands of Standard Cases

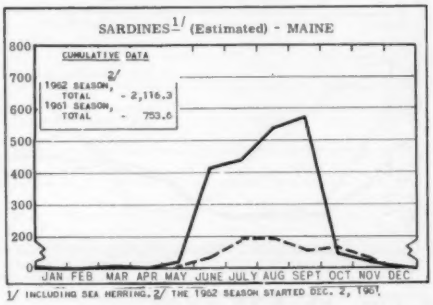

TUNA AND TUNALIKE FISH - CALIFORNIA
CUMULATIVE DATA
2 Mos. 1963 - 1,410.2
2 " 1962 - 1,546.3
12 " 1962 - 10,987.3
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC


MACKEREL 4/ - CALIFORNIA
CUMULATIVE DATA
2 Mos. 1963 - 222.9
2 " 1962 - 229.0
12 " 1962 - 1,221.5
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

4/ INCLUDES PACIFIC MACKEREL AND JACK MACKEREL.



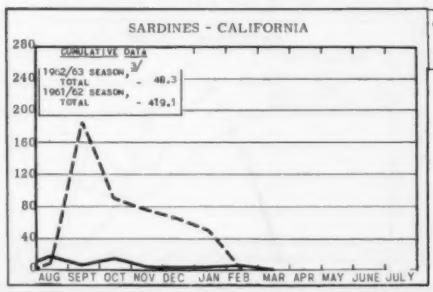


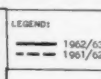

SARDINES 1/ (Estimated) - MAINE
CUMULATIVE DATA
1962 SEASON, TOTAL 2/ - 2,116.3
1961 SEASON, TOTAL - 753.6
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

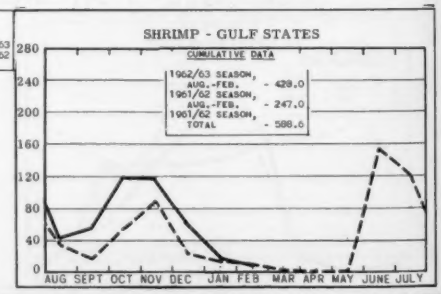
1/ INCLUDING SEA HERRING. 2/ THE 1962 SEASON STARTED DEC. 2, 1961.

STANDARD CASES

Variety	No. Cans	Designation	Net Wgt.
SARDINES.....	100	¼ drawn	3¾ oz.
SHRIMP.....	48	--	5 oz.
TUNA.....	48	# ½ tuna	6 & 7 oz.
PILCHARDS...	48	# 1 oval	15 oz.
SALMON.....	48	1-lb. tall	16 oz.
ANCHOVIES...	48	½-lb.	8 oz.


SARDINES - CALIFORNIA
CUMULATIVE DATA
1962/63 SEASON, TOTAL 3/ - 48.3
1961/62 SEASON, TOTAL - 419.1
AUG SEPT OCT NOV DEC JAN FEB MAR APR MAY JUNE JULY

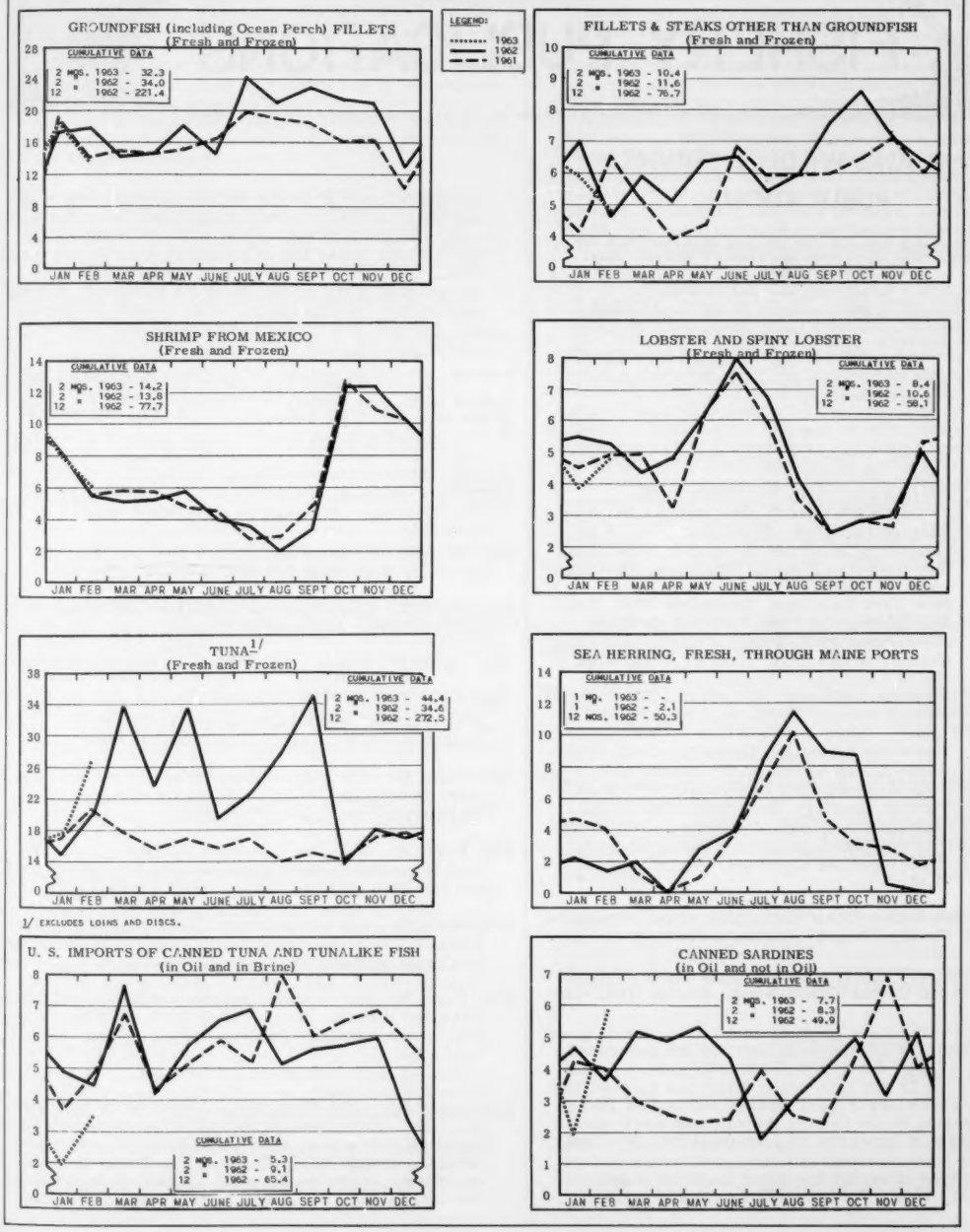



SHRIMP - GULF STATES
CUMULATIVE DATA
1962/63 SEASON, AUG.-FEB. - 428.0
1961/62 SEASON, AUG.-FEB. - 247.0
1961/62 SEASON, TOTAL - 588.6
AUG SEPT OCT NOV DEC JAN FEB MAR APR MAY JUNE JULY

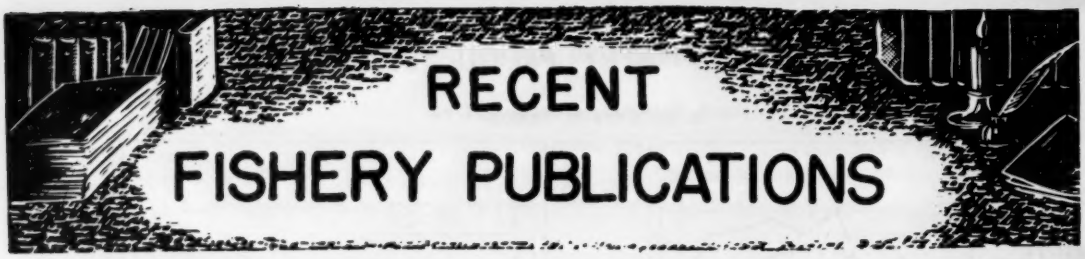
3/SEASON TOTAL, AUGUST 1, 1962-FEBRUARY 28, 1963.

CHART 7 - U.S. FISHERY PRODUCTS IMPORTS

In Millions of Pounds


GROUNDFISH (including Ocean Perch) FILLETS
(Fresh and Frozen)
CUMULATIVE DATA
2 MOS. 1963 - 32.3
2 " 1962 - 34.0
12 " 1962 - 221.4
LEGEND:
1963
1962
1961
FILLETS & STEAKS OTHER THAN GROUNDFISH
(Fresh and Frozen)
CUMULATIVE DATA
2 MOS. 1963 - 10.4
2 " 1962 - 11.6
12 " 1962 - 76.7
SHRIMP FROM MEXICO
(Fresh and Frozen)
CUMULATIVE DATA
2 MOS. 1963 - 14.2
2 " 1962 - 13.8
12 " 1962 - 77.7
LOBSTER AND SPINY LOBSTER
(Fresh and Frozen)
CUMULATIVE DATA
2 MOS. 1963 - 8.4
2 " 1962 - 10.6
12 " 1962 - 58.1
TUNA 1/
(Fresh and Frozen)
CUMULATIVE DATA
2 MOS. 1963 - 44.4
2 " 1962 - 34.6
12 " 1962 - 272.5
SEA HERRING, FRESH, THROUGH MAINE PORTS
CUMULATIVE DATA
1 MO. 1963 - -
1 " 1962 - 2.1
12 MOS. 1962 - 50.3
U. S. IMPORTS OF CANNED TUNA AND TUNALIKE FISH
(in Oil and in Brine)
CUMULATIVE DATA
2 MOS. 1963 - 5.3
2 " 1962 - 9.1
12 " 1962 - 65.4
CANNED SARDINES
(in Oil and not in Oil)
CUMULATIVE DATA
2 MOS. 1963 - 7.7
2 " 1962 - 8.3
12 " 1962 - 49.9
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

1/ EXCLUDES LOINS AND DISCS.



FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE OFFICE OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES.
FL - FISHERY LEAFLETS.
MNL - REPRINTS OF REPORTS ON FOREIGN FISHERIES.
SEP. - SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.
SSR. - FISH. - SPECIAL SCIENTIFIC REPORTS- FISHERIES (LIMITED DISTRIBUTION).

Number — Title

CFS-3032 - Alaska Fisheries, 1961 Annual Summary, 8 pp., (Revised).
CFS-3073 - Shrimp Landings, July 1962, 8 pp.
CFS-3080 - Frozen Fish Report, December 1962, 8 pp.
CFS-3082 - Florida Landings, November 1962, 8 pp.
CFS-3089 - Louisiana Landings, November 1962, 2 pp.
CFS-3093 - Manufactured Fishery Products, 1961 Annual Summary, 7 pp.
CFS-3095 - New York Landings, November 1962, 4 pp.
CFS-3096 - Fish Sticks and Fish Portions, October-December 1962, 2 pp.
CFS-3097 - California Landings, October 1962, 4 pp.
CFS-3098 - Maine Landings, November 1962, 4 pp.
CFS-3101 - Virginia Landings, November 1962, 4 pp.
CFS-3102 - Frozen Fishery Products, 1962 Annual Summary, 14 pp.
CFS-3103 - Louisiana Landings, December 1962, 2 pp.
CFS-3104 - Rhode Island Landings, November 1962, 3 pp.
CFS-3108 - Fish Meal and Oil, December 1962, 2 pp.
CFS-3109 - Florida Landings, December 1962, 8 pp.
CFS-3110 - Maryland Landings, December 1962, 3 pp.
CFS-3114 - Georgia Landings, December 1962, 2 pp.
CFS-3116 - South Carolina Landings, December 1962, 2 pp.

FL-28 - Fish Baits: Their Collection, Care, Preparation, and Propagation, 25 pp., August 1962 (Revised).

FL-293 - List of Fishermen's and Fish Shore Workers' Unions in the United States, 8 pp., August 1962 (Revised).

FL-444 - Some Publications on Game-Fish and Sport Fishing, 11 pp., June 1962 (Revised).

FL-459 - Freshwater Fish Diseases Caused by Bacteria Belonging to the Genera Aeromonas and Pseudomonas, by S. F. Snieszko, 7 pp., August 1962 (Revised).

FL-538 - Silver Hake, by Raymond L. Fritz, 9 pp., illus., May 1962. The silver hake or whiting (Merluccius bilinearis) is one of the few fish used for a variety of products--for human food, reduction, and animal food. It is one of the most abundant fish of our Atlantic coast and is sought by a large and varied fleet. This leaflet discusses the distribution and movements of the silver hake; its spawning, tagging, growth, and feeding habits. Also covers the commercial fishery, how silver hake are caught, and methods of handling and processing.

THE FOLLOWING MARKET NEWS LEAFLET IS AVAILABLE FROM THE FISHERY MARKET NEWS SERVICE, U. S. BUREAU OF COMMERCIAL FISHERIES, SUITE 611, WYATT BLDG., 777 14TH ST. NW., WASHINGTON 5, D. C.

Number — Title

MNL-52 - Menhaden Fish Oil Prices--New York City, 1950-1962 and January 1963, 6 pp.

Sep. No. 669 - Present and Future Factors that May Influence Fish Meal Demand.

Sep. No. 670 - Oyster Industry of Chesapeake Bay, South Atlantic, and Gulf of Mexico.

Sep. No. 671 - Eradication of Piranha in Inland Waters.

SSR-Fish. No. 405 - Interchange of Stream and Intragravel Water in a Salmon Spawning Riffle, by Walter G. Vaux, 15 pp., illus., March 1962.

SSR-Fish. No. 425 - Chum Salmon Resources of Alaska from Bristol Bay to Point Hope, by Chester R. Mattson, 25 pp., illus., May 1962.

SSR-Fish. No. 426 - An Electrical Oxygen-Temperature Meter for Fishery Biologists, by Kermit E. Sneed and Harry K. Dupree, 16 pp., illus., June 1962.

SSR-Fish. No. 432 - Protein and Calorie Levels of Meat-Meal, Vitamin-Supplemented Salmon Diets, by Bobby D. Combs and others, 10 pp., July 1962.

SSR-Fish. No. 436 - Oceanographic and Biological Data, Hawaiian Waters, January-July 1961, by Kenneth Sherman and Robert P. Brown, 46 pp., illus. July 1962.

America's Rare Sea Mammals, Conservation Note 9, 8 pp., illus., processed, June 1962. Discusses characteristics of sea mammals and their near-extinction along the coasts of North America. Describes the sea otter, northern, fur seal, Guadalupe fur seal, Pacific walrus, and polar bear. Also covers the

northern elephant seal, Hawaiian monk seal, Florida manatee, "right" whales, and gray whales.

THE FOLLOWING PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIFIC OFFICE MENTIONED.

(Baltimore) Monthly Summary--Fishery Products, December 1962, 8 pp. (Market News Service, U.S. Fish and Wildlife Service, 103 S. Gay St., Baltimore 2, Md.) Receipts of fresh- and salt-water fish and shellfish at Baltimore by species and by states and provinces; total receipts by species and comparison with previous periods; and wholesale prices for fresh fishery products on the Baltimore market; for the month indicated.

California Fishery Market News Monthly Summary, Part I - Fishery Products Production and Market Data, January 1963, 13 pp. (Market News Service, U.S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif.) California cannery receipts of tuna and tunalike fish and other species used for canning; pack of canned tuna, tunalike fish, sardines, mackerel, and anchovies; market fish receipts at San Pedro, Santa Monica, and Eureka areas; California and Arizona imports; canned fish and frozen shrimp prices; and ex-vessel prices for cannery fish; for the month indicated.

California Fishery Market News Monthly Summary, Part II - Fishing Information, January 1963, 19 pp., illus. (U.S. Bureau of Commercial Fisheries, Biological Laboratory, P.O. Box 6121, Pt. Loma Station, San Diego 6, Calif.) Contains sea-surface temperatures, fishing and research information of interest to the West Coast tuna-fishing industry and marine scientists; for the month indicated.

(Chicago) Monthly Summary of Chicago's Wholesale Market Fresh and Frozen Fishery Products Receipts, Prices, and Trends, January 1963, 13 pp. (Market News Service, U.S. Fish and Wildlife Service, U.S. Customs House, 610 South Canal St., Room 1014, Chicago 7, Ill.) Receipts at Chicago by species and by states and provinces for fresh- and salt-water fish and shellfish; and weekly wholesale prices for fresh and frozen fishery products; for the month indicated.

Gulf of Mexico Monthly Landings, Production and Shipments of Fishery Products, January 1963, 12 pp. (Market News Service, U.S. Fish and Wildlife Service, Room 609, 600 South St., New Orleans 12, La.) Gulf States shrimp, oyster, finfish, and blue crab landings; crab meat production; LCL express shipments from New Orleans; wholesale prices of fish and shellfish on the New Orleans French Market; fishery imports at Port Isabel and Brownsville, Texas, from Mexico; Gulf menhaden landings and production of meal, solubles, and oil; and sponge sales; for the month indicated.

Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, February 1963, 4 pp. (Market News Service, U.S. Fish and Wildlife Service, Post Office Box 447, Hampton, Va.) Landings of food fish and shellfish and production of crab meat and shucked oysters for the Virginia areas of Hampton Roads, Chincoteague, Lower Northern Neck, and Lower Eastern Shore; the Maryland areas of Crisfield, Cambridge, and Ocean City; and the North Carolina areas of Atlantic, Beaufort, and Morehead City; together with cumulative and comparative data on fishery products and shrimp production; for the month indicated.

New England Fisheries--Monthly Summary, January 1963, 23 pp. (Market News Service, U. S. Fish and Wildlife Service, 10 Commonwealth Pier, Boston 10, Mass.) Review of the principal New England fishery ports. Presents data of fishery landings by ports and species; industrial fish landings and ex-vessel prices; imports; cold-storage stocks of fishery products in New England warehouses; fishery landings and ex-vessel prices for ports in Massachusetts (Boston, Gloucester, New Bedford, Provincetown, and Woods Hole), Maine (Portland and Rockland), Rhode Island (Point Judith), and Connecticut (Stonington); frozen fishery products prices to primary wholesalers at Boston, Gloucester, and New Bedford; and Boston Fish Pier and Atlantic Avenue fishery landings and ex-vessel prices by species; for the month indicated.

(Seattle) Washington and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries, Monthly Summary, January 1963, 7 pp. (Market News Service, U. S. Fish and Wildlife Service, 706 Federal Office Bldg., 909 First Avenue, Seattle 4, Wash.) Includes Seattle's landings by the halibut and salmon fleets reported through the exchanges; landings of halibut reported by the International Pacific Halibut Commission; landings of otter-trawl receipts reported by the Fishermen's Marketing Association of Washington; local landings by independent vessels; coastwise shipments from Alaska by scheduled and non-scheduled shipping lines and airways; imports from British Columbia via rail, motor truck, shipping lines, and ex-vessel landings; and imports from other countries through Washington customs district; for the month indicated.

THE FOLLOWING SERVICE PUBLICATIONS ARE FOR SALE AND ARE AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, U. S. GOVERNMENT PRINTING OFFICE, WASHINGTON 25, D. C.

Bioassay and Use of Pituitary Materials to Spawn Warm-Water Fishes, by Howard P. Clemens and Kermit E. Sneed, Research Report 61, 35 pp., illus., 25 cents, 1962.

"Development and Distribution of the Short Bigeye, Pseudopriacanthus altus (Gill), in the Western North Atlantic," by David K. Caldwell, Fishery Bulletin 203 (from Fishery Bulletin of the Fish and Wildlife Service, vol. 62, pp. 103-150), 52 pp., illus., printed, 35 cents, 1962.

"Effect of Certain Electrical Parameters and Water Resistivities on Mortality of Fingerling Silver Salmon," by John R. Pugh, Fishery Bulletin 208 (from Fishery Bulletin of the Fish and Wildlife Service, vol. 62, pp. 223-234), 16 pp., illus., printed, 15 cents, 1962.

"Food of Albacore Tuna, Thunnus germo (Lacepede), in the Central and Northeastern Pacific," by Robert T. B. Iversen, Fishery Bulletin 214 (from Fishery Bulletin of the Fish and Wildlife Service, vol. 62 pp. 459-481), 27 pp., illus., printed, 25 cents, 1962.

"Hydrological Characteristics of Tampa Bay Tributaries," by Alexander Dragovich and Billie Z. May, Fishery Bulletin 205 (from Fishery Bulletin of the Fish and

Wildlife Service, vol. 62, pp. 163-176), 18 pp., illus., printed, 20 cents, 1962.

Limnological Organic Analyses by Quantitative Dichromate Oxidation, by John A. Maciolek, Research Report 60, 67 pp., illus., 40 cents, 1962.

"Midwater Trawling for Forage Organisms in the Central Pacific 1951-1956," by Joseph E. King and Robert T. B. Iversen, Fishery Bulletin 210 (from Fishery Bulletin of the Fish and Wildlife Service, vol. 62, pp. 271-321), 55 pp., illus., printed, 40 cents, 1962.

"Relationships among North American Salmonidae," by George A. Rounsefell, Fishery Bulletin 209 (from Fishery Bulletin of the Fish and Wildlife Service, vol. 62, pp. 235-270), 40 pp., illus., printed, 30 cents. 1962.

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE ORGANIZATIONS OR PUBLISHER MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

* * * * *

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* * * * *

ALGAE:

Physiology and Biochemistry of Algae, by Ralph A. Lewin, 929 pp., illus., printed $32. Academic Press Inc., 125 E. 23rd St., New York 10, N. Y., 1963. A reference source covering the major topics in experimental phycology, the study of algae as living organisms, and summarizing much of the recent progress in the field.

"Protein Value and the Amino Acid Deficiencies of Various Algae for Growth of Rats and Chicks," by G. A. Leveille, H. E. Sauberlich, and J. W. Shockley (Fitzsimons General Hospital, Denver, Colo., article, Journal of Nutrition, vol. 76, April 1962, pp. 423-428, printed. American Institute of Nutrition, 36th St. at Spruce, Philadelphia 4, Pa.

ARCTIC:

"Arctic Research Poses Many Problems," by Bruce Woodland, article, Trade News, vol. 15, no. 3, September 1962, pp. 8-10, illus., processed. Information and Consumer Service, Department of Fisheries, Ottawa, Canada. Describes the experiences of a scientific team, including a fisheries specialist, which carried out studies on the Prince Gustaf Adolph Sea, in an area roughly six hundred miles from the North Pole, in the spring of 1961. No fish was taken, but plankton hauls to depths of 400 feet yielded some shrimp-like organisms. Many important contributions to the fields of oceanography and biology of arctic seas were made, according to the author.

ARCTIC CHAR:

"Landlocked Arctic Char in Newfoundland," by J. J. Quigley, article, Trade News, vol. 15, no. 3, September 1962, pp. 11-12, illus., processed, Information and Consumer Service, Department of Fisheries, Ottawa, Canada. First reported in Newfoundland in 1949, the landlocked Arctic char (Salvelinus alpinus) has since been discovered to be distributed widely in the lakes and ponds throughout the province. A Canadian Department of Fisheries survey of this species in 1958 produced valuable information on spawning and growth. Originally an anadromous species, in many areas the Arctic char has become completely cut off from migration to salt-water and has adapted to living as a fresh-water fish. Potentialities for a sport fishery are excellent, according to the author.

AUSTRALIA:

Commonwealth of Australia Fishing Industry Act 1956, Sixth Annual Report, 8 pp., processed. Commonwealth Fisheries Office, Department of Primary Industry, Canberra, Australia, 1962. The sixth annual report on operations of the Trust Account during 1961-62. The Fisheries Development Trust Account was established under the Act for the purpose of financing activities towards the development of the fishing industry in Australia. This report discusses the Trust Account, applications for assistance, the Great Australian Bight trawling project, and the Western Australia tuna survey. Also covers the training school for fisheries field officers, research on Western Australian crayfish, and other related information.

BEHAVIOR OF FISH:

"Notions of Niche and Competition among Animals, with Special Reference to Freshwater Fish," by A. H. Weatherley, article, Nature, vol. 197, no. 4862, January 5, 1963, pp. 14-17, illus., printed, single copy 4s. (about 56 U.S. cents). St. Martin's Press, Inc., 175 Fifth Ave., New York 10, N. Y.

BEHEADING FISH:

"Beheading of Fish," by R. G. T. Baader, article, Food Manufacture, vol. 37, June 1962, p. 306, printed. Leonard Hill, Ltd., Stratford House, 9 Eden St., London NW1, England.

BIOCHEMISTRY:

"A Preliminary Report on the Performic Acid Oxidation Products of Fish, Whale, and Ox Insulins," by Sasao Nishizaki, article, Chemical Abstracts, vol. 55, November 13, 1961, 23604i, printed. The American Chemical Society, 1155 16th St. NW., Washington 6, D. C.

BYPRODUCTS:

"Fish Byproducts: Preservation of Raw Material" article, Torry Research Station, Annual Report 1960, p. 27, printed. Torry Research Station, Aberdeen, Scotland, 1961.

CAMEROON FEDERAL REPUBLIC:

Investment Law of the Federal Republic of Cameroon, OBR-62-32, 8 pp., printed, 15 cents. Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C., December 1962. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Discusses the investment code of the French Republic of Cameroon, and background and related information of use to possible United States investors.

CANADA:

Boatbuilding and Repair (Formerly The Boat Building Industry), 1960, 15 pp., printed, 50 Canadian cents.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

Queen's Printer and Controller of Stationery, Ottawa, Canada, 1963. Data presented in this report reflect the implementation of the revised Standard Industrial Classification (SIC) which is being used by the Dominion Bureau of Statistics in its compilation of 1960 industry statistics. An annual census of manufacturers covering establishments primarily engaged in building and repairing all types of boats.

"Canada's Trade Relations with South American Countries," article, Foreign Trade, vol. 118, no. 12, December 15, 1962, pp. 28-30, printed, single issue 20 Canadian cents. Queen's Printer and Controller of Stationery, Ottawa, Canada.

Fisheries Statistics, Alberta and Northwest Territories, 1961, 22 pp., printed in French and English, 50 Canadian cents. Queen's Printer and Controller of Stationery, Ottawa, Canada, February 1963. Contains tables giving the value of fish landed in Alberta, 1954-1961; and the quantity and value of fish landed by fisheries districts, 1960-1961. Also contains tables showing value of fish landings in the Northwest Territories, 1954-1961; quantity and value of fishery products by species, 1960-1961; capital equipment used in the primary fisheries operations; and the number of persons engaged in the fisheries.

Fisheries Statistics, Manitoba, 1961, 11 pp., printed in French and English, 50 Canadian cents. Queen's Printer and Controller of Stationery, Ottawa, Canada, January 1963. Contains tables giving the value of fish landed in Manitoba, 1954-1961; quantity and value of landings by species and fisheries districts, 1960-1961; quantity and value of fishery products by species; capital equipment used in the primary fishery operations; and the number of persons engaged in the fisheries.

Fisheries Statistics, Newfoundland, 1961, 26 pp., illus., printed in French and English, 50 Canadian cents. Queen's Printer and Controller of Stationery, Ottawa, Canada, December 1962. Contains tables giving the value of fish and shellfish landed in Newfoundland, 1957-1961; quantity and value of landings by species and fisheries areas, 1960-1961; quantity and value of fishery products by species; capital equipment used in the primary fishery operations; and the number of persons engaged in the fisheries.

Fisheries Statistics, Ontario, 1961, 12 pp., illus., printed in French and English, 50 Canadian cents. Queen's Printer and Controller of Stationery, Ottawa, Canada, December 1962. Contains tables giving the value of fish landed in Ontario, 1954-1961; quantity and value of landings by species and fisheries districts, 1960-1961; capital equipment used in the primary fisheries operations; number of persons engaged in the fisheries; and new capital investment in the commercial fishery.

Fisheries Statistics, Prince Edward Island, 1961, 25 pp., illus., printed in French and English, 50 Canadian cents. Queen's Printer and Controller of Stationery, Ottawa, Canada, February 1963. Consists of tables giving the quantity and value of fish and shellfish landed in Prince Edward Island, 1949-1961; quantity and value of landings by species and fisheries districts, 1960-1961; capital investment in the commercial fisheries; classification of powered fishing craft by over-all length; persons engaged in primary operations by fisheries districts and in the major fisheries of Prince Edward Island.

Fisheries Statistics, Saskatchewan, 1961, 9 pp., printed in French and English, 50 Canadian cents. Queen's Printer and Controller of Stationery, Ottawa, Canada, January 1963. Contains data on the value of fish landed in Saskatchewan, 1954-1961; quantity and value of landings by species, 1960-1961; quantity and value of landings by major species and by lakes; capital equipment in primary fisheries operations; and the number of persons engaged in the primary fisheries operations.

CANNED FISH:

"Accumulation of Salts of Tin in Canned Fish," by F. M. Purikov, article, Izvest. Vysshikh Ucheb. Zavedenii Pishch. Tekh., vol. 4, no. 23, 1961, pp. 100-105, printed. Izvest. Vysshikh Ucheb. Zavedenii Pishch. Tekh., Izd Krasnodarskogo Inst. Tishchevoi Promyshlennosti, Ul. Krasnaya, 135, Krasnodar, U.S.S.R.

"Total Weight and Fish Content of Canned Fish," by W. Schwabe, article, Deutsche Lebensmittel-Rundschau, vol. 57, 1961, pp. 62-68, printed. Deutsche Lebensmittel-Rundschau, Wissenschaftliche Verlagsgesellschaft, m.b.H., Postfach 40, Stuttgart 1, Germany.

CANNING:

"Canning: Chemical Changes in Herring during Heat Processing," article, Torry Research Station, Annual Report 1960, pp. 25-26, printed. Torry Research Station, Aberdeen, Scotland, 1961.

"Experiments on Canning Fresh-Water Fish. II--Smelts from West End of Lake Erie," by A. W. Lantz, and L. C. Dugal, article, Progress Reports of the Biological Station and the Technological Unit No. 1, pp. 28-30, printed. Fisheries Research Board of Canada, Technological Unit, London, Ontario, Canada, September 1959.

"The Manufacture of Sterilized Mussel and Oyster Products," by H. Houwing, article, Conserva, vol. 10, no. 2, 1961, pp. 29-31, printed in Dutch. Moorman's Periodieke Pers N. V., 1 Zwarteweg, The Hague, Netherlands.

CHILE:

Informe de las Actividades Desarrolladas durnate la Expedicion MAR--CHILE II (Report on the Activity Developments during the Expedition "Sea--Chile II"), by Omar Rojas Jara, 16 pp., processed in Spanish. Ministerio de Agricultura, Departamento de Pesca y Caza, Santiago, Chile, August 1962.

"Proyecto sobre Produccion y Desarrollo de Pesces de Importancia Comercial en el Norte de Chile" (Project for the Production and Development of Fish of Commercial Importance in Northern Chile), by Walter Fischer and Luis Ramorino, Divulgacion Pesquera Cartilla No. 5, August 1962, 14 pp., illus., processed in Spanish. Ministerio de Agricultura, Direccion de Agricultura y Pesca, Departamento de Pesca y Caza, Santiago, Chile.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

CLAMS:
"Animal Food from Clam Waste," by John Marvin and Edward E. Anderson, article, Chemical Abstracts, vol. 56, April 16, 1962, 9182g, printed. The American Chemical Society, 1155 16th St. NW., Washington, D. C.

"Proteins of Shellfish. IX--Components of Shell Liquid of Clam," by H. Baba, article, Chemical Abstracts, vol. 55, October 30, 1961, 22629e, printed. The American Chemical Society, 1155 16th St. NW., Washington, D. C.

COMMON MARKET:
"The Common Market: How Would Entry Affect Britain's Fishing Industry?" article, World Fishing, vol. 12, no. 1, January 1963, pp. 58-60, 63, illus., printed, single copy 3s. (about 42 U.S. cents). World Fishing, John Trundell & Partners Ltd., St. Richard's House, Eversholt St., London NW1, England.

COMPOSITION:
"Acid-Soluble Phosphorus Compounds and Free Sugars in Fish Muscle and Their Origin," by H. L. A. Tarr and M. Leroux, article, Canadian Journal of Biochemistry and Physiology, vol. 40, May 1962, pp. 571-589, printed. National Research Council, Ottawa, Canada.

"Chemical Composition of Some South African Marine Products," by P. G. Celliers, article, Chemical Abstracts, vol. 56, May 14, 1962, 12044c, printed. The American Chemical Society, 1155 16th St. NW., Washington, D. C.

"Seasonal Variations of Chemical Composition of Fish," by Eliezer de Carvalho Rios (Ministry of Agriculture, Rio Grande, Brazil), article, Chemical Abstracts, vol. 56, July 9, 1962, 1389d, printed. The American Chemical Society, 1155 16th St. NW., Washington, D. C.

CONGO REPUBLIC (BRAZZAVILLE):
Investment Law of the Republic of Congo (Brazzaville), by A. A. Wilken, Jr., OBR-62-15, 12 pp., printed, 15 cents. Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C., December 1962. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Contains the full text of the Investment Code of the Republic of the Congo (Brazzaville), and presents details of its enactment. The Code sets forth certain rights or guarantees of all business ventures in the country and establishes three categories under which fiscal and other privileges can be accorded to firms investing in new industries or expanding existing industrial activities.

CRAB MEAT:
"Prevention of Formation of Magnesium Ammonium Phosphate in Canned Crabs," by Akio Yamada, article, Chemical Abstracts, vol. 56, June 11, 1962, 14683d, printed. The American Chemical Society, 1155 16th St. NW., Washington, D. C.

DEEP-SEA DIVING:
"Physiological Problems of Deep-Sea Diving," by Stanley Miles, article, New Scientist, vol. 15, no. 306, September 27, 1962, pp. 671-673, illus., printed. New Scientist, Cromwell House, Fulwood Pl., High Holborn, London WC1, England.

DEFROSTING:
"Defrosting Foods by Radio Frequency," article, Food Technology, vol. 16, July 1962, pp. 27-28, printed, The Garrard Press, 510 N. Hickory, Champaign, Ill.

DENMARK:
Fiskeriberetning for Aret 1961 (The Ministry of Fisheries Annual Report for 1961), 137 pp., illus., printed in Danish with English summary, Kr. 7.50 (about US$1.09). Fiskeriministeriet, 1 Kommission Hos. G.E.C. Gad, Copenhagen, Denmark. A report on the Danish fishing industry during 1961. Includes information and statistical tables on number of fishermen employed, fishing fleet, fishing gear, and landings of fish and shellfish. Also contains information on trout farms; production of canned, filleted, and smoked fish; and foreign trade in fishery products.

ECHO-SOUNDER:
"Searching the Sea with Sound," by D. G. Tucker, article, New Scientist, vol. 15, July 19, 1962, pp. 134-136, printed. New Scientist, Cromwell House, Fulwood Pl., High Holborn, London WC1, England.

ECOLOGY:
"Controlling Experimental Conditions in Studies of Eggs and Larvae of Aquatic Forms," by V. L. Loosanoff, article, American Zoologist, vol. 2, no. 3, August 1962, pp. 426-427, printed. American Society of Zoologists, 104 Liberty St., Utica, N. Y.

ECUADOR:
Industrial Development Law of Ecuador, by Lawrence J. Comella, OBR-62-17, 12 pp., printed, 15 cents. Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C., December 1962. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, 25, D. C.) Discusses the old Law of 1957 and the new emergency decree-law of August 9, 1962, promulgated to further Ecuador's industrialization. "The replacement of imports by goods manufactured in Ecuador and the production of new items for exportation would constitute the elements that would produce this effect," according to the report. Includes, also, a translation of the new law.

FARM PONDS:
Fish Management in New York Farm Ponds, by A. W. Eipper and H. A. Regier, Cornell Extension Bulletin 1089, 36 pp., illus., printed. New York State College of Agriculture, Cornell University, Ithaca, N. Y., July 1962. Discusses the types of fish suitable to stocking, location and construction features, stocking regulations and sources of fish, and pond maintenance. Also covers the biology and management of trout ponds, bass-shiner ponds, bass-bluegill ponds, and others. According to the authors, "There are more than 18,000 farm ponds in New York State and new ones are being constructed at the rate of about 1,000 a year."

FAUNA:
MEEKIA: Enigmatic Cretaceous Pelecypod Genus, by Louella Rankin Saul and Willis Parkison Popenoe, 55 pp., illus., printed, $1.25. University of California Press, Berkeley 4, Calif., 1963.

FEDERAL INCOME TAX:
Rules for Deducting Travel, Entertainment, and Gift Expenses for 1962; New Recordkeeping Rules for

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

1963, Document No. 5049 (1-63), 20 pp., printed. Internal Revenue Service, U. S. Treasury Department, Washington 25, D. C., 1963. Aid to taxpayers in filing 1962 returns and new recordkeeping rules for 1963 are presented. Expenses for business travel, for entertaining customers, clients, and other business contacts, and for business gifts are deductible under certain circumstances. During 1962 Congress enacted new rules for these expenditures which are effective after December 31, 1962. The leaflet is divided into two main parts. The first part explains the rules in effect for such expenditures before January 1, 1963, which should be followed in filing income tax returns for 1962. The second part explains the new rules for such expenditures after December 31, 1962, with the emphasis on the stricter requirements for current recordkeeping and substantiation.

FISH BEHAVIOR:
"Alarm Reaction of the Top Smelt, Atherinops affinis (Ayres)," by W. A. Skinner, R.D. Mathews, and R. M. Parkhurst, article, Science, vol. 138, no. 3541, November 9, 1962, pp. 681-682, printed, single copy 35 cents. Science, 1515 Massachusetts Ave. NW., Washington 5, D. C. The "alarm" substance of the smelt has been isolated by extraction with methanol or ether from suffocated smelt. These concentrated extracts, when introduced into an aquarium containing smelt, induce a strong alarm reaction in the fish, characterized by rapid swimming, jumping, and often severe seizures. The fact that extracts from some other species caused only mild excitation in the smelt indicates the species-specificity of the alarm reaction.

*Sekret Ryb'ikh Stai (The Secret of Fish Schools), by E. P. Fedorovskii, R 24468, printed in Russian, 1960.

FISHERY MANAGEMENT:
*Forelevoe Rybovodnoe Khoziaistvo (Management of Trout Fishery), by K. A. Sadlaev, R 24637, printed in Russian, 1962.

FISH FLAVOR:
"A Study of the Influence of Selected Preparation Procedures on Flavor and Aroma of Fish," by Ruth E. Baldwin, Dorothy Hussemann Strong, and James H. Torrie, article, Food Technology, vol. 16, July 1962, pp. 115-118, printed. The Garrard Press, 510 N. Hickory, Champaign, Ill.

FISH HYDROLYSATES:
"Fish Hydrolysates, Pastes, and Sauces," by N. L. Lahiry and D. P. Sen (Central Food Technological Research Institute, Mysore, India), article, Chemical Abstracts, vol. 56, March 19, 1962, 6429i, printed. The American Chemical Society, 1155 16th St. NW., Washington 6, D. C.

"Fish Hydrolysates. I--Rate of Hydrolysis of Fish Flesh with Papain," by D. P. Sen and others; and "II--Standardization of Digestion Conditions for Preparation of Hydrolysates Rich in Peptones and Proteoses," by N. V. Sripathy and others, articles, Food Technology, vol. 16, May 1962, pp. 138-142, printed. Central Food Technological Research Institute, Mysore, India.

FISHING EFFORT:
"On the Mechanism of Fishing in which Distribution Curve of Catch Per Unit Effort is Very Like Logarithmic Distribution," by Tadashi Yamamoto, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 27, February 1961, pp. 137-142, printed. Japanese Society of Scientific Fisheries, 6-chome, Shiba-Kaigandori, Minato-ku, Tokyo, Japan.

FISHING LAMPS:
"A Study of Effects of Different Kinds of Fishing Lamps," by Yoshinobu Isa, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 27, June 1961, pp. 493-500, printed. Japanese Society of Scientific Fisheries, 6-chome, Shiba-Kaigandori, Minato-ku, Tokyo, Japan.

FISHING WITH LIGHTS:
"Lumieres sur l'Atlantique--Venu de la Mediterranee le Lamparo 'gagne' la Bretagne" (Lights on the Atlantic--the Mediterranean "Lamparo" Introduced to Brittany), by J. Regnier, article, France Peche, vol. 7, no. 65, September 1963, pp. 19-25, 27, illus., printed in French. France Peche, Boite Postale 179, Lorient (Morbihan), France.

FISH MEAL:
"Fish Meal Malodours," by G. M. Dreosti and S. G. Wiechers (Fishing Industry Research Institute, University of Cape Town, South Africa), article, Fishing News International, vol. 1, April 1962, pp. 35-39, printed. A. J. Heighway Publications Ltd., 110 Fleet St., (Ludgate House), London EC4, England.

"Fish Meal--Present and Future," by Clarence F. Winchester, article, Feedstuffs, vol. 34, September 22, 1962, pp. 34-36, printed. Miller Publishing Co., 2501 Wayzata Blvd., Minneapolis 5, Minn.

"The Operation of Streampumps in the Fishmeal industry," by W. Luhr, article, Fette Seifen Anstrichmittel, vol. 64, May 1962, pp. 445-446, printed. Fette Seifen Anstrichmittel, Industrieverlag von Hernhaussen K. G., Hamburg 11, Germany.

FISH OILS:
"Stability of Dienoic Acids Contained in Hydrogenated Whale and Fish Oils," by Hisashi Watanabe and Yoshiyuki Toyama, article, Chemical Abstracts, vol. 55, December 25, 1961, 27923a, printed. The American Chemical Society, 1155 16th St. NW., Washington 6, D. C.

"Studies on Utilization of Oils and Fats Obtainable from Viscera of Aquatic Animals," by Hiroshi Sone, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 27, December 1961, pp. 1100-1106, printed. Japanese Society of Scientific Fisheries, 6-chome, Shiba-Kaigandori, Minato-ku, Tokyo, Japan.

FISH PROTEIN CONCENTRATE:
"Factors Influencing the Nutritional Value of Fish Flour. I--Effects of Extraction with Chloroform or Ethylene Dichloride," by A. B. Morrison, Z. I. Sabry, and E. J. Middleton (Food and Drug Laboratories, Department of National Health and Welfare, Ottawa, Canada), article, Journal of Nutrition, vol. 77, May

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1962, pp. 97-104, printed. American Institute of Nutrition, 36th St. at Spruce, Philadelphia 4, Pa.

"The Nutritional Value of Fish Flour (Fish Protein Concentrate)," by A. B. Morrison and J. A. Campbell (Department of National Health and Welfare, Ottawa, Canada), article, Chemical Abstracts, vol. 56, May 28, 1962, 13315f, printed. The American Chemical Society, 1155 16th St. NW., Washington, D. C.

"The Nutritive Value of the Mineral Components of a South African Fish Flour (Fish Protein Concentrate), with Special Reference to the Effect of Supplementation with Potassium," by D. B. Du Bruyn and J. J. Dreyer (National Nutrition Research Institute, Pretoria, South Africa Republic), article, Chemical Abstracts, vol. 57, July 9, 1962, 1348c, printed. The American Chemical Society, 1155 16th St. NW., Washington, D. C.

"Studies on Fish Flour (Fish Protein Concentrate)," by V. Subrahmanyan and others, article, Food Science, vol. 11, no. 2, 1962, pp. 37-61, printed. Central Food Technological Research Institute, Mysore, India.

FISH SOLUBLES:

"Evaluation of Condensed Fish Solubles as a Chick Growth Stimulant in an 8-year Study," by Robert J. Lillie, H. Menge, and C. A. Denton, article, Poultry Science, vol. 41, July 1962, pp. 1202-1206, printed. Poultry Science Association, Ohio State University, Columbus 10, Ohio.

FRANCE:

La Peche Maritime, vol. 41, no. 1017, December 1962, 180 pp., illus., printed in French, 22.50 NF (about US$4.57). La Peche Maritime, 190, Boulevard Haussmann, Paris 8e, France. The annual issue is devoted to accomplishments in 1962 and prospects for the marine fishery industries in 1963. Articles are grouped under the subjects of the Common Market, vessel construction, fishery ports, and general information. Included, among others, are the following articles: "Les surcharges particulieres qui pesent sur la peche francais doivent disparaitre" (Specific Burdens with which the French Fishery is Beset Must Vanish), by M. Rouge; "Le plan de relance de l'economie des peches" (Plan to Restore Economy of the Fisheries), by Rene Thibaudau; and "Comment functionnent les institutions de la Communaute economique europeene" (How Institutions of the European Economic Community Function).

FREEZE-DRYING:

"Denaturation of Fish Protein by Freeze-Drying," by Juichiro J. Matsumoto (Tokaiku Regional Fisheries Expt. Sta., Tokyo), article, Chemical Abstracts, vol. 56, May 28, 1962, 13306i, printed. The American Chemical Society, 1155 16th St. NW., Washington 6, D. C

"Enzymic Activity at Low Moisture Levels and Its Relation to Deterioration in Freeze-Dried Foods," by N. A. Matheson (Ministry of Agriculture, Fisheries, and Food, Research Establishment, Aberdeen, Scotland), article, Journal of the Science of Food and Agriculture, vol. 13, April 1962, pp. 248-254, printed. The Society of Chemical Industry, 14 Belgrave Sq. London SW1, England.

"Faster Packaging Improvements Needed for Freeze-Drieds," by John H. Nair, article, Food Engineering, vol. 34, June 1962, pp. 44-46, printed. Chilton Company, Chestnut and 56th Sts., Philadelphia 36, Pa.

"Freeze-Drying in Europe Today," by Robert M. Kolodny, article, Food Processing, vol. 23, January 1962, pp. 38-40, 43-44, printed. Putnam Publishing Co., 111 E. Delaware Pl., Chicago 11, Ill.

"Freeze-Dry Systems Changing," by John H. Nair, article, Food Engineering, vol. 34, June 1962, pp. 41-43, printed. Chilton Company, Chestnut and 56th Sts., Philadelphia 36, Pa.

"Packaging of Freeze-Dried Foods," by T. H. Angel, article, Food Manufacture, vol. 37, April 1962, pp. 157-158, printed. Leonard Hill Ltd., 9 Eden St., London NW1, England.

"A Short Guide to Freeze-Drying," by J. McN. Dalgleish, article, Food Manufacture, vol. 37, April 1962, pp. 151-156, printed. Leonard Hill Ltd., 9 Eden St., London NW1, England.

FROZEN FISH:

"Fat Hydrolysis in Frozen Fish. II--Relation to Protein Stability," by Doris I. Fraser and W. J. Dyer, article, Progress Reports of the Atlantic Coast Stations, no. 72, pp. 37-39, printed. Fisheries Research Board of Canada, Biological Station, St. Andrews, N. B., Canada, September 1959.

"Use of Phosphates to Prevent Drip Loss in Frozen Fish," by John H. Mahon, article, Chemical Abstracts, vol. 57, October 15, 1962, 10318g, printed. The American Chemical Society, 1155 16th St. NW., Washington, D. C.

GABON REPUBLIC:

Investment Law in the Republic of Gabon, by A. A. Wilken, Jr., OBR-62-20, 12 pp., printed, 15 cents. Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C., December 1962. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Discusses the investment code of the Republic of Gabon, and background and related information of use to possible United States investors.

GEAR:

"The 'S' Shaped Fishpots of Jamaica," article, World Fishing, vol. 11, no. 12, December 1962, pp. 39-40, 43, illus., printed, single copy 3s. (about 42 U. S. cents). World Fishing, John Trundell & Partners Ltd., St. Richard's House, Eversholt St., London NW1, England. Fishpots are used extensively throughout the Caribbean where bottom conditions are generally too rough for trawling and the abundance of sharks limits the use of other bottom fishing methods. The two-funnel "S" pot used in Jamaica is traditional and is the most widely used fishing method on the island. This article discusses the operation and method of construction of the fishpot.

GENERAL:

The Fishes, by Url Lanham, printed, C$5. The Copp Clark Publishing Company, Ltd., 517 Wellington St., W., Toronto, Canada, 1962. An easily understood

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account of fish--their origin, the major groups into which they fall, and the structure of the species in these few groups. The evolutionary background needed to understand the structure of modern fish is discussed, after which the actual structure is described in chapters on such subjects as swimming, reproduction, and sense perception.

GERMAN FEDERAL REPUBLIC:
Customs Valuation under the Revised German Customs Law, Effective January 1962, OBR-62-22, 4 pp., printed, 15 cents. Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C., January 1963. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) A report on the new customs valuation procedure of the German Federal Republic. The new procedure, also applicable to West Berlin, was established in the Customs Valuation Code--Wertzollordnung--of November 29, 1961. It took effect simultaneously with the enabling law on January 1, 1962. The report covers the principal provisions in the ordinance: normal price, invoice price, valuation of goods in special cases, and final provisions.

HANDLING FISH:
Practical Notes on the Care of the Trawlers Catch, by J. C. D. Watts, Fisheries Department Technical Paper No. 1, 6 pp., printed, 1s. (about 14 U.S. cents). Government Bookshop, Water St., Freetown, Sierra Leone, 1962.

HEMOTOLOGY:
"Variant Hemoglobin and Electrophoretic Whole Blood Studies in Two Tunas and Three Other Fish Species," by Albert C. Smith, article, California Fish and Game, vol. 49, no. 1, January 1963, pp. 44-49, illus., printed, single copy 75 cents. California Fish and Game, Printing Division, Documents Section, Sacramento 14, Calif.

HERRING:
Vitamin A and Fat in the Herring (CLUPEA HARENGUS L.) and in Its Food, by L. R. Fisher and Zena D. Hosking, Marine Research No. 4, 35 pp., illus., printed, 11s. (US$2.20--includes mailing costs). Sales Section, British Information Services, 845 Third Ave., New York 22, N. Y., 1962.

HONDURAS:
Import Tariff System of Honduras, by Frederick J. Tower, OBR-62-3, 2 pp., printed, 15 cents. Bureau of International Commerce, U.S. Department of Commerce, Washington, D. C., November 1962. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Covers units of currency, weights, and measures; bases of specific and ad valorem duties; methods of payment of duty; and preferential duties accorded other Central American nations. Also discusses customs surtaxes, sales and other internal taxes, consular documents and fees, trade restrictions, and special regulations.

INTERNATIONAL LAW COMMISSION:
Juridical Regime of Historic Waters, including Historic Bays (Study prepared by the Secretariat), A/CN.4/143., 74 pp., processed. Secretariat, United Nations, New York, N. Y., March 8, 1962.

IOWA:
Quarterly Report Iowa Cooperative Wildlife and Fisheries Research Units, vol. 28, no. 2, October, November, December 1962, 49 pp., illus., processed, distribution restricted. Iowa State University of Science and Technology, Ames, Iowa. Includes, among others, articles on: "Parasites and Diseases of Fish and Wildlife;" "Factors Affecting Fish Production;" "Stream Biology as Related to Fish Production--Des Moines River;" "Effect of Some Physiological and Physical Factors on Blood Lactic Acid Concentration of Channel Catfish;" and "Dynamics of Fish Populations in Natural Lakes--Clear Lake."

IRISH MOSS:
"They Rake Money from the Sea!" article, Fish Boat, vol. 7, April 1962, pp. 26-27, printed. H. L. Peace Publications, 624 Gravier St., New Orleans 9, La.

ISLAMIC REPUBLIC OF MAURITANIA:
Investment Law in the Islamic Republic of Mauritania, OBR-62-25, 4 pp., printed, 15 cents. Bureau of International Commerce, U.S. Department of Commerce, Washington, D. C., December 1962. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Discusses the investment code of the Islamic Republic of Mauritania, and background and related information of use to possible United States investors.

JAPAN:
Bulletin of the Hokkaido Regional Fisheries Research Laboratory, no. 25, November 1962, 66 pp., illus., printed in Japanese with English abstracts. Hokkaido Regional Fisheries Research Laboratory, Yoichi, Hokkaido, Japan. Includes the following articles: "Studies on the Early Life History of Herring, Clupea pallasi. 2--On the Growth and Survival of Larvae in Akkeshi Bay, Hokkaido," by A. Iizuka and others; "On the Locomotion of the Squids, Ommastrephes sloani pacificus (Steenstrup), in the Okhotsk Sea along the Coast of Hokkaido during the Autumn of 1961," by H. Araya and S. Kawasaki; "On the Gill-Net Mesh Selectivity Curve," by T. Ishida; "A Study on a Process for Abating Harm Inflicted by Sulphite Pulp Waste upon Aquatic Products," by H. Igarashi and A. Iida; and "Report on Dissolved Nutrients Investigations in the North Pacific and the Bering Sea During June-August 1960," by K. Miwa.

"The Oil Industry of Japan," by Toshimi Akiya, article, Journal of the American Oil Chemists' Society, vol. 39, April 1962, p. 4, printed, American Oil Chemists' Society, 35 East Wacker Dr., Chicago 1, Ill.

Statistic Tables of Fishing Vessels (as of the End of 1961), General Report No. 14, 208 pp., illus., printed in Japanese and English. Japanese Fisheries Agency, Tokyo, Japan. An annual report containing statistical data in detail on the various types of Japanese fishing craft, both powered and nonpowered, as obtained by a fishery registration system. The trend toward motorization of nonpowered craft is noted in this report.

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LIPIDS:

"Extraction of Lipids from Oxidizing Mullet," by Marelynn W. Zipser, Jacqueline Dupont, and Betty M. Watts, article, Journal of Food Science, vol. 27, March-April 1962, pp. 135-138. Journal of Food Science, Department of Food and Nutrition, Florida State University, Tallahassee, Fla.

"Lipids of Salmonoid Fishes. I--Acetone-Soluble Lipid from Liver of Salmon, Oncorhynchus masou (Masu)," by Mutsuo Hatano, Koichi Zama, and Hisanao Igarashi, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 27, November 1961, pp. 1001-1004, printed. Japanese Society of Scientific Fisheries, 6-chome, Shiba-Kaigandori, Minato-ku, Tokyo, Japan.

MUSSELS:

"Tennessee's Mussel Industry," article, The Tennessee Conservationist, vol. XXIX, no. 1, January 1963, pp. 12, 15, illus., printed. The Tennessee Conservationist, 264 Cordell Hull Bldg., 436 Sixth Ave. N., Nashville, Tenn.

NICARAGUA:

Investment in Nicaragua, by Richard P. Rice, OBR-62-14, 12 pp., printed, 15 cents. Bureau of International Commerce, U.S. Department of Commerce, Washington, D. C., December 1962. (For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D. C.) Discusses Nicaragua's economic growth, the Government's effort to create conditions favorable to private investment, investment and management, incentive legislation, and taxation. A section on the fisheries outlines a new basic law, promulgated under a decree effective March 6, 1961, designed to regulate the fishing industry. Also covers requirements for fishing licenses and taxation on fishery enterprises.

NYASALAND:

Annual Report of the Department of Game, Fish and Tsetse Control for the Year Ended 31st December 1961, 28 pp., printed, 4s. (about 56 U.S. cents). Government Printer, Zomba, Nyasaland, 1962. The section on fisheries discusses the state of the fish stocks, large-scale licensed fishing enterprises, small-scale unlicensed enterprises, trade in fishery products, and developmental work. Also covers fishery training and public relations, gear and technological research, work of the Joint Fishery Research Organization, trout fishing, fish farming, and other projects. Also includes tables showing landings by gear, by fish genus, and by time of day, in the fresh-water fishery.

OCEANOGRAPHY:

Horizontal Diffusion from an Instantaneous Point-Source Due to Oceanic Turbulence, by Akiro Okuoo, Technical Report 32, 125 pp., illus., processed. Chesapeake Bay Institute, The Johns Hopkins University, Baltimore 18, Md., December 1962.

A Review of Theoretical Models of Turbulent Diffusion in the Sea, by Akiro Okubo, Technical Report 30, 112 pp., illus., processed. Chesapeake Bay Institute, The Johns Hopkins University, Baltimore 18, Md., September 1962.

Seas, Maps, and Men (An Atlas-History of Man's Exploration of the Oceans), edited by G.E.R. Deacon, 297 pp., illus., printed, $9.95 Doubleday & Company, Inc., Garden City, N.Y., 1962. A beautifully-illustrated book, in both color and black-and-white, featuring relief maps, photographs, and reproductions of paintings, drawings, and other art forms. The introduction discusses the earth and its oceans, giving basic geological and geographical information. Then follows a chapter on men against the sea, and the lives of some of the world's great explorers, from Pytheas to the men of the Nautilus. The next section--life in the sea--covers creatures of the sea, the discovery of plankton, the movement of fishes, the great chain of life, and marine biology as a science. Other chapters present some fascinating information on sunken cities and forgotten wrecks, and facts about the sea. In the preface, the authors point out: "Man's exploration of the oceans began long before recorded history. Curiosity must have been one of the motives but the main inducements were the search for food and wealth. During the fifteenth and sixteenth centuries the search for trade routes to the East and the discovery of new lands were the main driving forces. Soon after James Cook's famous voyages in the late eighteenth century most of the great geographical puzzles of the oceans had been solved. In the following century oceanography was to receive its greatest stimulus from science, which sponsored expeditions like the three-year voyage around the world of the research ship H.M.S. Challenger. Today the scientific exploration of the oceans is being carried out by many nations. Like the earlier explorers, the scientist-explorers of the twentieth century continue to search the sea for food, but in addition they are looking for ways to tap the vast mineral wealth and to harness the energy locked up in the oceans; but perhaps more important are the basic studies that are refining our knowledge of the great chain of life in the seas, the currents, the action of waves and tides, and geological and geophysical aspects of the sea floor." This is an excellent textbook for schools, probably at the high school level, and would certainly be a worthwhile addition to any home library.

Underwater Acoustics, edited by V. M. Albers, 354 pp., illus., printed, $12.50. Plenum Press, 227 W. 17th St., New York 11, N.Y., 1963.

OREGON:

Surface Temperature and Salinity Observations at Shore Stations on the Oregon Coast for 1961, by Malcolm Oliphant, Bruce Wyatt, and Norman F. Kujala, Data Report No. 8, 20 pp., illus., processed. Department of Oceanography, School of Science, Oregon State University, Corvallis, Oreg., September 1962.

OYSTERS:

"Chromate Color Test for Estimating Age-Temperature History of Raw Shucked Oysters," by M. L. Schafer, J. E. Campbell, and K. H. Lewis (U.S. Department of Health, Education, and Welfare, Cincinnati, Ohio), article, Journal of Agriculture and Food Chemistry, vol. 10, May-June 1962, pp. 261-267, printed. The American Chemical Society, 1155 16th St. NW., Washington 6, D. C.

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"Effect of Pesticides on Oysters," by Philip A. Butler, Alfred J. Wilson, and Alan J. Rick (U. S. Bureau of Commercial Fisheries, Gulf Breeze, Fla.), article, Chemical Abstracts, vol. 57, August 20, 1962, 5140a, printed. The American Chemical Society, 1155 16th St. NW., Washington 6, D. C.

PACIFIC OCEAN:
The Distribution of Pacific Euphausiids, by Edward Brinton, 219 pp., illus., printed, $5. University of California Press, Berkeley 4, Calif., 1963.

PEARLING:
Australian Pearling Industry Statistical Handbook, 49 pp., illus., processed. Fisheries Division, Department of Primary Industry, Canberra, Australia, August 1962. Recent trends of the Australian pearling industry are shown by the statistics presented in this handbook. Contains data on quantity and value of pearl and trochus shell production, Japanese pearling operations in Australian waters, and exports of marine shells. Most data are for 1961, with some information for the period 1901-1961.

PENNSYLVANIA:
Engineering and Biological Study of Proposed Fish-Passage at Dams on Susquehanna River, Pennsylvania, by Milo C. Bell and Harlan B. Holmes, 137 pp. plus 49 figs. and 64 plates, processed. Pennsylvania Fish Commission, Harrisburg, Pa., December 1962. Reports on an engineering and biological study of the problems of fish passage at Conowingo and Safe Harbor Dams on the Susquehanna River.

PHILIPPINES:
Licensing and Exchange Controls in the Philippines, by Kenneth A. Guenther, OBR-62-2, 8 pp., printed, 15 cents. Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C., November 1962. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Controls on imports into the Philippines that had been in effect since 1949 were lifted by Presidential proclamation of January 21, 1962. All import transactions now take place at the freely fluctuating exchange rate. This report covers Philippine import and export controls, United States import and export controls, and other related information.

PHYSIOLOGY:
*Rukovodstvo po Metodike Issledovanii Fiziologii Ryb; Sbornik Statei (Handbook of Research Methods on Physiology of Fish; Collected Articles), R 24469, printed in Russian. Akademiia Nauk SSSR, Ikhtiologicheskaia Komissiia, 1962.

POULTRY NUTRITION:
"Studies on the Soy and Fish Solubles Growth Factors for Chicks," by W. W. Westerfeld and A. C. Hermans, article, Journal of Nutrition, vol. 76, April 1962, pp. 503-511, printed. American Institute of Nutrition, 36th St. at Spruce, Philadelphia 4, Pa.

POULTRY RATIONS:
"Fish Byproducts, Poultry Byproducts Meal, and Methionine Hydroxy Analogue as Variables in Broiler Rations," by Elbert J. Day, Ben C. Dilworth, and James E. Hill, article, Poultry Science, vol. 41, July 1962, pp. 1261-1267, printed. Poultry Science Association, Ohio State University, Columbus 10, Ohio.

"Seaweed Meal in Feed for Chicks and Laying Hens," by A. Mehner, K.W. Stute, and U. Torges (Bundesforschungsanstalt Kleintierzucht, Celle, Germany), article, Chemical Abstracts, vol. 56, April 30, 1962, 10651g, printed. The American Chemical Society, 1155 16th St. NW., Washington 6, D. C.

PROTEIN:
"Products of Protein Hydrolysis from Fish," by D. P. Sen and N. L. Lahiry (Central Food Technological Research Institute, Mysore, India), article, Chemical Abstracts, vol. 56, June 11, 1962, 14676c, printed. The American Chemical Society, 1155 16th St. NW., Washington 6, D. C.

"Studies on the External Mucous Substance of Fishes. IV--Amino Acid Composition of the Protein of the External Mucous Substance from Some Fishes," by Noriyuki Enomoto, Tokio Izumi, and Yukio Tomiyasu, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 27, June 1961, pp. 606-608, printed. Japanese Society of Scientific Fisheries, 6-chome, Shiba-Kaigandori, Minato-ku, Tokyo, Japan.

QUALITY:
"Effect of Subfreezing on Fish Quality," by N. A. Golovkin and L. I. Persina, article, Kholodil'naia Tekhnika, no. 1, 1961, pp. 35-38, printed. Four Continent Book Corporation, 156 5th Ave., New York 10, N. Y.

RADIATION:
"Radiation-Pasteurized Shrimp and Crabmeat," by Dorothy J. Scholz and others, article, Food Technology, vol. 16, July 1962, pp. 118-120, printed. The Garrard Press, 510 N. Hickory, Champaign, Ill.

RADIOACTIVE CONTAMINANTS:
A Study of the Movement and Diffusion of an Introduced Contaminant in New York Harbor Waters, by D. W. Pritchard, Akiro Okubo, and Emanuel Mehr, Technical Report 31, 95 pp., illus., processed. Chesapeake Bay Institute, The Johns Hopkins University, Baltimore 18, Md., October 1962.

RADIOACTIVE ISOTOPES:
*Ispol'zovanie Radioaktivnikh Izotopov v Rybnom Khoziaistvu (Use of Radioactive Isotopes in the Fishing Industry), by G. S. Karzinkin, R 25325, printed in Russian, 1962.

RAINBOW TROUT:
"Changes in Glycogen, Pyruvate and Lactate in Rainbow Trout (Salmo gairdneri) during and following Muscular Activity," by Edgar C. Black and others, article, Journal of the Fisheries Research Board of Canada, vol. 19, May 1962, pp. 409-436, printed. Queen's Printer and Controller of Stationery, Ottawa, Canada.

"Diet, Glycogen Reserves and Resistance to Fatigue in Hatchery Rainbow Trout. Part II," by Richard B. Miller and Frances Miller, article, Journal of the Fisheries Research Board of Canada, vol. 19, May 1962, pp. 365-375, printed. Queen's Printer and Controller of Stationery, Ottawa, Canada.

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"Laboratory Study of the Toxicity of Certain Synthetic Detergents to the Rainbow Trout," by J. Wurtz-Arlet, article, Chemical Abstracts, vol. 57, October 15, 1962, 10374a, printed. The American Chemical Society, 1155 16th St. NW., Washington 6, D. C.

REFRIGERATION:
The Effect of Storage in Refrigerated Sea Water on the Amino Acids and Other Components of Fish (Paper presented at FAO International Conference on Fish in Nutrition, Washington, D. C., September 19-27, 1961), by E.H. Cohen and J.A. Peters, processed. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1961.

RHODESIA AND NYASALAND:
Basic Data on the Economy of The Federation of Rhodesia and Nyasaland, by John F. Handford and Clifford R. Nelson, OBR-62-44, 12 pp., printed, 15 cents. Bureau of International Commerce, U.S. Department of Commerce, Washington, D. C., (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. A section on fishing covers fishery products landings from Lakes Kariba, Mweru, and Nyasa; and assistance to the industry given by the United Nations Special Fund. Discusses geography and climate, population, form of government, structure of the economy, and finance. Also discusses economic development, agriculture, external trade, industry, and other related information.

Import Tariff System of the Federation of Rhodesia and Nyasaland, OBR-62-26, 2 pp., printed, 15 cents. Bureau of International Commerce, U.S. Department of Commerce, Washington, D. C., December 1962. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Covers currency, weights, and measures; specific and ad valorem duties; and preferential treatment of duties--federal tariff and dumping duties. Also covers method of payment of duty, customs surtaxes and internal taxes, shipping documents and fees, and trade restrictions.

SALMON:
"Composition of Sperm Nuclei in Baltic Salmon," by I. B. Zbarskii and L. P. Ermolaeva (A. N. Severtsov Inst. Animal Morphol., Moscow, U.S.S.R.), article, Chemical Abstracts, vol. 56, January 8, 1962, 793b, printed. The American Chemical Society, 1155 16th St. NW., Washington 6, D. C.

SAUDI ARABIA:
Preparing Shipments to Saudi Arabia, by Roger D. Severance, OBR-62-28, 8 pp., printed, 15 cents. Bureau of International Commerce, U.S. Department of Commerce, Washington, D. C., December 1962. (For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D. C.) A report on the preparation of shipments for export to Saudi Arabia. It covers the preparation of shipping documents, information on labeling and marking, customs procedures, and related subjects.

SEA OTTER:
The Sea Otter, by I. I. Barabash-Nikiforov, V. V. Reshetkin, and N. K. Shidlovskaya, OTS 61-31057, 331 pp., illus., printed, $2.25. (Translated from the Russian, Kalan, 266 pp., 1947.) Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C., 1962.

SEAWEED:
"Storage of Dried Laver at Low Temperature," by Yasuhiko Tsuchiya, Yoshio Suzuki, and Takashi Sasaki, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 27, October 1961, pp. 919-933, printed. Japanese Society of Scientific Fisheries, 6-chome, Shiba-Kaigandori, Minato-ku, Tokyo, Japan.

SENEGAL REPUBLIC:
Investment Law of the Republic of Senegal, OBR-62-31, 8 pp., printed, 15 cents. Bureau of International Commerce, U.S. Department of Commerce, Washington, D. C., December 1962. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Discusses the investment code of the Republic of Senegal, and background and related information of use to possible United States investors.

SHAD:
"Chemical Composition of West African Fish. I--West African Shad from the Sierra Leone River Estuary," by J. C. D. Watts (West African Fisheries Research Institute, Freetown, Sierra Leone), article, Chemical Abstracts, vol. 56, April 30, 1962, 10717b, printed. The American Chemical Society, 1155 16th St. NW., Washington 6, D. C.

SHARK LIVER OIL:
"A New Method for Refining of Shark Liver Oil on Commercial Scale and Recovery of Vitamin A by Partial Saponification," by S. A. Ali and L. Rahman, article, Chemical Abstracts, vol. 55, December 11, 1961, 26363f, printed. The American Chemical Society, 1155 16th St. NW., Washington 6, D. C.

SHARKS:
"Partitioning of Body Fluids in the Lake Nicaragua Shark and Three Marine Sharks," by Thomas B. Thorson, article, Science, vol. 138, no. 3541, November 9, 1962, pp. 688-690, printed, single copy 35 cents. Science, 1515 Massachusetts Ave., NW., Washington 5, D. C.

SHRIMP:
"Deteriorative Changes in Frozen Shrimp and Their Inhibition," by M. B. F. Chastain, article, Journal of the Science of Food and Agriculture, vol. 12, 1961, p. ii 239, printed. The Society of Chemical Industry, 14 Belgrave Sq., London SW1, England.

"Qualitative Distribution of Free Amino Acids in Different Species of Prawns," by N. K. Velankar and K. Mahadeva Iyer, article, Chemical Abstracts, vol. 56, January 8, 1962, 789b, printed. The American Chemical Society, 1155 16th St. NW., Washington 6, D. C.

"Rock Salt Makes Brine for Shrimp Canning," by Ray M. Thompson, article, Canner Packer, vol. 131, August 1962, pp. 32-33, printed. Triad Publishing Co., 59 E. Monroe St., Chicago 3, Ill.

SMALL BUSINESS MANAGEMENT:
Financing Export Sales, by Clarence J. Ruethling, Management Aids for Small Manufacturers No. 149, 4 pp., processed. Small Business Administration,

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

Washington 25, D. C., February 1963. A report describing steps to be taken by businessmen in financing export sales. Discusses five specific types of information needed by the seller in such transactions: (1) financial responsibility and moral reputation of his overseas buyer; (2) availability of dollars in the country of purchase; (3) documentation and protection required to effect shipment; (4) various means of getting and guaranteeing payment, and (5) financial help which is available to exporters.

Small Manufacturers and the Financial Gap, by James F. Mahar and Dean C. Coddington, Management Research Summary, 2 pp., processed. Small Business Administration, Washington 25, D. C., 1963. A summary of a report on the fund-raising ability of small firms during formation and early growth. Often long-term funds are not available when their need is most critical. Part of this "financial gap" is due to lack of knowledge about sources of funds. Better understanding of the criteria used by various financial institutions could save time both for owner-managers of small firms and for the institutions.

Tax Dates for Small Marketers, Small Marketers Aid No. 87, printed. Small Business Administration, Washington 25, D. C. Prepared mainly for small businessmen who have to fill out their own tax forms. Lists the kinds of Federal taxes and their due dates. Points out that a review of the tax calendar can be helpful in financial planning. The Internal Revenue Service requires that statements from businessmen on various tax forms be supported by permanent records. This leaflet suggests: "Why not, if you aren't already doing it, coordinate your recordkeeping with the various tax dates? For example, if your business year ends at a date which means extra work in gathering tax information, you may want to revamp your system so that your regular records will give you the proper tax information."

Tax Dates for Small Plants, Management Aid for Small Manufacturers No. 148., 8 pp., processed. Small Business Administration, Washington 25, D. C., January 1963. A leaflet giving dates important to small businessmen in the payment of Federal taxes. Contains a 1963 tax calendar, information for fiscal year taxpayers, and a list of general and special tax forms. Also includes a calendar for state and local taxes to be filled in by the individual. Stresses that the Internal Revenue Service requires that all of the taxpayer's statements on tax forms be supported by permanent records.

Wholesalers' Services to Food Retailers, by Russell L. Childress and R. Dean Shippy, Management Research Summary, 2 pp., processed. Small Business Administration, Washington 25, D. C., 1963. A summary of a report on food retailers' evaluation of wholesalers' services. In the study conducted in connection with the report, it was found that retailers' ideas varied about what their wholesalers could do to improve their services. However, the following were among those expressed most often: (1) expansion of the produce-procurement services; (2) more help from the meat and produce specialists; (3) better store-planning programs; and (4) supplying a management-training program.

SMOKING:

The Preservation of Fish by Smoke-Curing in the Torry Kiln, by J.C.D. Watts, Fisheries Department Technical Paper No. 2, 8 pp., printed, 1s. (about 14 U.S. cents). Government Bookshop, Water St., Freetown, Sierra Leone, 1962.

SPERM OIL:

"Sperm Whale Oil," by Pablo Kovacs (Derma S.R.L., Buenos Aires, Argentina), article, Chemical Abstracts, vol. 56, January 22, 1962, 1544d, printed. The American Chemical Society, 1155 16th St. NW., Washington 6, D. C.

"Utilization of Sperm Oil. IV--Fatty Alcohol Compositions of Glyceride Fraction and Wax Fraction Separated from Sperm Oil by the Urea-Adduct Method," by Shoichiro Watanabe and Yoshiro Abe (Keio Kijuku Univ., Tokyo, Japan), article, Chemical Abstracts, vol. 55, March 20, 1961, 5995a, printed. The American Chemical Society, 1155 16th St. NW., Washington 6, D. C.

STERN TRAWLERS:

"Stern Trawling Systems--A World Fishing Survey;" "British Trawl Winch Design in 1962," by H. S. Noel; "Operating Experience of Second Dutch Stern Trawler," articles, World Fishing, vol. 12, no. 1, January 1963, pp. 50-57, illus., printed, single copy 3s. (about 42 U.S. cents). World Fishing, John Trundell & Partners Ltd., St. Richard's House, Eversholt St., London NW1, England. Compares the designs of various stern trawlers and outlines their operations. Among the many advantages of this type of vessel are improved working conditions for the crew and less damage to the catch.

STORAGE OF FISH IN SEA WATER:

"Cooling and Keeping of Fish and Small Shrimps in Sea Water," by L. Van Pel, article, De Visserijwereld, vol. 20, 1961, pp. 27-29, printed in Dutch. N. V. Drukkerij Trio, 27 Nobelstraat, The Hague, Netherlands.

TAIWAN:

Common Food Fisnes of Taiwan, by Yun-sheng Liang, Po-wei Yuan, and Hung-chia Yang, 96 pp., illus., printed. Chinese-American Commission on Rural Reconstruction, Taipei, Taiwan, China, December 1962. Gives names of food fish of Taiwan in Chinese and English, their scientific names, a brief description of each species, information as to where and when they are available, and their market price. Describes, with illustrations, 51 species of fish and 14 species of other aquatic animals.

THAILAND:

Investment Factors in Thailand, 1962, by William H. Riley, WTIS Part 1, Economic Report No. 62-82, 16 pp., illus., printed, 15 cents. Bureau of International Commerce, U.S. Department of Commerce, Washington, D. C., November 1962. (For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D. C.) A handbook of valuable information for the prospective investor in Thailand. At the close of 1961, United States private investment, the largest share of total foreign investment in Thailand, was estimated at $27 million. This report covers present U.S. private investment, Gov-

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

ernment policy, entry of U. S. private capital, and controls on capital. It also discusses investment negotiation, taxation of foreign investment, manufacturing, and business data. Included are several photos and maps.

THAWING:

"Dielectric Thawing of Fish. I--Experiments with Frozen Herrings," by A. C. Jason and H. R. Sanders, article, Food Technology, vol. 16, June 1962, pp. 101-106, printed. The Garrard Press, 510 N. Hickory, Champaign, Ill.

TRADE LISTS:

The Bureau of International Business Operations, U. S. Department of Commerce, has published the following mimeographed trade lists. Copies may be obtained by firms in the United States from the Commercial Intelligence Division, Office of Trade Promotion, Bureau of Foreign Commerce, U. S. Department of Commerce, Washington 25, D. C., or from Department of Commerce field offices at $1 each.

Canneries and Frozen Foods--Producers and Exporters--Spain, 48 pp. (October 1962). Lists the names and addresses, size of firms, and types of products handled by each firm. Includes producers and exporters of canned and frozen fish and shellfish. Also contains trade and industry data (including fishery products).

Oils (Animal, Fish and Vegetable)--Importers, Producers, Refiners and Exporters--Republic of South Africa, 25 pp., November 1962. Lists the names and addresses, size of firms, and types of products handled by each firm. Includes firms dealing in fish and whale oils, and shark liver oil.

TROUT:

"Trout Show Susceptibility to Cancer-Producing Agents," article, New Scientist, vol. 15, no. 306, September 27, 1962, p. 662, printed. New Scientist, Cromwell House, Fulwood Pl., High Holborn, London WC1, England.

TUNA:

"The Schooling Behavior of Pacific Yellowfin and Skipjack Tuna Held in a Bait Well," by James Joseph and Izadore Barrett, article, California Fish and Game, vol. 49, no. 1, January 1963, p. 55, printed, single copy 75 cents. California Fish and Game, Printing Division, Documents Division, Sacramento 14, Calif.

UGANDA:

Uganda, Report for the Year 1961, 73 pp., illus., printed. Information Department, Government of Uganda, Entebbe, Uganda, 1962. Includes a small section on the fisheries of Lakes Albert and Victoria, and the Nile River.

U.S.S.R.:

*Biologiia Ozera Baikal (Biology of the Lake Baikal), by M. M. Kozhov, R 24470, printed in Russian, 1962.

*Rybi Basseina R. Usy i Ikh Kormovye Resursy (Fish of the Usa River Basin and Their Food Resources), R 24537, printed in Russian. Akademiia Nauk SSSR, Komi Filial, 1962.

Rybnoe Khoziaistvo, vol. 38, no. 6, June 1962, 88 pp., printed in Russian. Rybnoe Khoziaistvo, VNIRO Glavniproekta, pri Gosplanie SSSR, Moscow, U.S.S.R. Includes, among others, these articles: "Complex Mechanization and Automation is the Principal Step Towards the Development of the Fishing Industry," "Yearly Plan Accomplished in Four Months," "Resources of the World Oceanic Fishery," by G. V. Martinsen; "South-Atlantic Sardine," by S. M. Overko; "The Problem of Young Pink Salmon and Dolly Varden Char (Salvelinus malma) Migrating Downstream in the Rivers of Sakhalin," by M. Ia. Kazarnovskii; "Perfecting Maiakovskii Class Trawler Design during Construction," by V. M. Ivanov; "Industrial Equipment Needs of Stern Trawlers," by G. A. Traubenberg and others; "The Trawling Speed," by I. R. Matrosov; "The Work of Fishermen Assigned to Trawler Kureika," by O. Krotova and V. Chaikin; "Exploratory Activities in the Area of Newfoundland," by B. E. Karasev; "Mechanized Lines in the Preprocessing of Salted Herring," by L. Rozin; "The Production of Special Canned and Salted Herring on Refrigerator Ships of the RR Class," by L. G. Visk; "New Saury-Cutting Machine," by V. E. Sakharov; "Fish Processing, a Profitable Branch in Kolkhoz Economics," by N. N. Kravtsov; "New Soviet-Japanese Agreement," "Flying Fishes," "Conference of Personnel Working for the Fishing Industry in the Azov-Black Sea Area," "Conference of Personnel Working for the Fishing Industry in the Caspian Sea Region," and "Seminar on Pond Fishery."

--Titles translated by Milan A. Kravanja

Rybnoe Khoziaistvo, vol. 38, no. 7, July 1962, 91 pp., printed in Russian. Rybnoe Khoziaistvo, VNIRO Glavniproekta, pri Gosplanie SSSR, Moscow, U.S.S.R. Includes, among others, these articles: "Measures for Increasing the Catch of Fish and Output of Fishery Products," "Fishery Resources of the Seas and Oceans Must be Better Exploited!," "Fluctuations of Atlantic and Scandinavian Herring Populations," by S. S. Federov; "Commercial Fishery for Baltic Herring in the Gulf of Finland," by A. F. Bondarenko; "New Commercial Fishery Resources," "Basic Problems in Construction of Automated Trawler," by G. B. Terent'ev and L. A. Ganf; "New Methods of Trawling for Far Eastern Ocean Perch," by A. V. Lestev; "A Review of the Work of Large Refrigerated Trawler (BMRT) Saltykov-Shchedrin," by B. Chervov; "How to Insure the Safety of Vessels during Fishing Operations," by A. M. Koniaev; "The Refrigeration Mechanic's Shipboard Laboratory," by B. V. Golubev; "Fish-Breading Machine," by V. T. Sakharov; "Cooler for Fried Fish and other Food Products," by M. Fikh; "Changes in Weight of Salmon during Salting," by E. A. Nasedkina; "Vitamin Content in Fish and Whale Flour," by V. I. Treshcheva; "The Work of the Bulgarian Trout Farm 'Samokov'," by N. E. Sal'nikov; and "New Era in the Development of Soviet-Norwegian Fishery Relations," by A. A. Volkov.

--Titles translated by Milan A. Kravanja

*Sovetskie Rybokhoziaistvennye Issledovaniia v Severo-Zapadnoi Chasti Atlanticheskogo Okeana (Soviet Fishery Research in the Northwestern Atlantic), R 25409, printed in Russian. Poliarnii Nauchno-Issledovatel'skii Institut Morskogo Khoziaistva i Okeanografii (PINRO), 1962.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGAINZATION ISSUING THEM.

WEST AFRICA:

Import Tariff System of the Entente States (Ivory Coast, Dahomey, Niger, and Upper Volta), OBR-62-11, 4 pp., printed, 15 cents. Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C., December 1962. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) In 1959, as autonomous members of the French Community, the four territories established a political association known as the Council of the Entente. Since gaining political independence in 1960 the member states have maintained generally coordinated economic and social policies, and have associated with Senegal, Mali, and Mauritania to form the West African Customs Union. This report covers units of currency, weights, and measures; bases of specific and ad valorem duties; methods of payment of duty; and basic and preferential duties. Also discusses the customs surtaxes of member countries, their sales and other internal taxes, shipping documents and fees, trade restrictions, and other special regulations.

WHALING:

"International Quota Agreements," article, Norsk Hvalfangst-Tidende, vol. 51, no. 12, December 1962, pp. 461-466, printed in Norwegian and English. Hvalfangerforeningen, Sandefjord, Norway. Summarizes the background and details of a new whaling agreement acceded to by Japan, Netherlands, U.S.S.R., Norway, and the United Kingdom. The agreement was signed at London, June 6, 1962, but must be ratified by all member governments before becoming fully effective. Provides for the distribution, among themselves by percentages, of the total annual catch of Antarctic whales by the signatory nations.

"International Whaling Commission (Chairman's Report of the Fourteenth Meeting)," by C. R. Clark, article, Norsk Hvalfangst-Tidende, vol. 51, no. 12, December 1962, pp. 466-473, printed. Hvalfangerforeningen, Sandefjord, Norway. Comprises the Chairman's Report from the 14th Meeting of the International Whaling Commission, held at London, July 2-6, 1962. Reports on condition of the stocks, Antarctic catch limitation, blue whale unit catch limit, opening of the baleen whaling season, blue whale and humpback whale protection, minimum length for sperm whales, North Pacific whale stocks, and related topics.

International Whaling Statistics, no. XLIX, 80 pp., printed, Kr. 2.00 (about 28 U.S. cents). The Committee for Whaling Statistics, Oslo, Norway, 1963. A report on the results of the whaling operations in the Antarctic during the season 1960/1961 and on grounds outside the Antarctic in the calendar year 1961. Includes statistical tables on whaling in the Antarctic; whaling operations of Norway, the United Kingdom, Japan, and the U.S.S.R.; whaling results for various other countries; average size of whales caught; and whales caught by species, sex, and size. Also includes data on average production of oil per "blue-whale equivalent;" and average production of oil per sperm-whale.

"Whaling Operations in the Antarctic in the Season 1961/62," article, Norsk Hvalfangst-Tidende (Norwegian Whaling Gazette), vol. 51, no. 9, September 1962, pp. 347-364, 367-368, 370-373, printed in Norwegian and English. Norsk Hvalfangst-Tidende, Hvalfangerforeningen, Sandefjord, orway. A survey of the whaling operations in the Antarctic in the season 1961/62 prepared for and submitted at the meeting of the International Whaling Commission in London in June 1962. Covers the most important regulations of the Convention for that season, factoryships and catching boats operated by the countries subscribing to the Convention, and duration of the whaling season. Also discusses the catch by species in the various areas, the catch results in relation to the vessels engaged in whaling and catching time spent, oil production per blue-whale unit, average size of the whales landed, sexually mature and immature whales, and ratio of blue and fin whales in the catch. Includes a number of statistical tables on those topics.

SYNTHETIC DIET FAILS ON CATFISH

In 1962, trials at the Southeastern Fish Cultural Laboratory, U. S. Bureau of Sport Fisheries and Wildlife, control groups of channel catfish fed the synthetic ration successfully used in nutritional-requirement experiments on trout and salmon failed to grow. It is postulated that either channel catfish cannot use one or more of the 18 crystalline amino acids composing the protein complement of the diet or this species may require some nutritional element additional to those needed by salmonoids. (Good growth was previously exhibited by channel catfish on a diet in which casein was the protein source.) The addition of hydroxyproline to the salmonid test diet will be tried to see if this amino acid is essential for channel catfish growth.

REVELER'S SALMON DELIGHT

2 pounds salmon steaks or other fish steaks, fresh or frozen
¼ cup melted fat or oil
2 tablespoons lemon juice
2 tablespoons anchovy paste
1 tablespoon chopped parsley
Dash pepper
Paprika

Thaw frozen steaks. Cut into serving-size portions. Combine remaining ingredients except paprika; mix thoroughly. Place fish on a well-greased broiler pan. Brush with sauce. Broil about 3 inches from source of heat for 5 minutes. Turn carefully and brush other side with sauce. Broil 4 to 5 minutes longer, basting once, until fish is lightly browned and flakes easily when tested with a fork. Sprinkle with paprika. Serves 6.

--From Fisheries Marketing Bulletin: "Let the Sparkle of Mardi Gras--Linger on Your Table Throughout the Lenten Season." Issued by the National Marketing Services Office, U. S. Bureau of Commercial Fisheries, Chicago 5, Ill.

FISHERY MARKET NEWS

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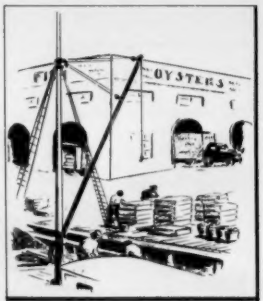

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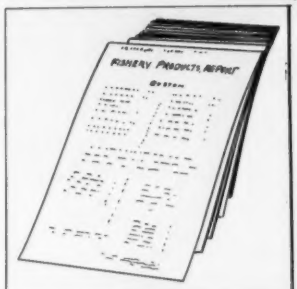

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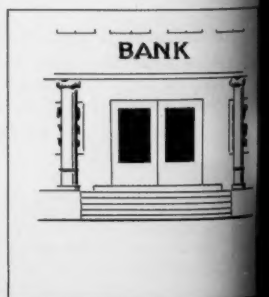

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